THE BUILDER

INCORPORATING

"ARCHITECTURE" and "THE BRITISH ARCHITECT"

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THIS WEEK'S NEWS

PAGE

AN exhibition of the Harlow New Town development proposals is to be opened next month at the Royal Institute of British Architects by the Rt. Hon. Lewis Silkin, Minister of Town and Country Planning. A large-scale model of Mr. Frederick Gibberd's master plan for the town will be on show. 350

PLANS for the enlargement of Salisbury Diocesan Training College in the Cathedral Close have been prepared by Mr. W. Curtis Green, R.A., F.R.I.B.A. The new buildings, which are estimated to cost £250,000, have been designed in the Georgian style and fit in with the whole design of the Close in a manner similar to the Cambridge and Oxford colleges. 351

PLANS are now being discussed regarding an international industrial exhibition and conference to be held at the Royal Institute of British Architects' headquarters in the Spring of next year. The conference will be concerned primarily with Great Britain's industrial problems and suggestions for dealing with them. 351

IN a Parliamentary reply, Mr. Belcher, Parliamentary Secretary to the Board of Trade, has stated that the Government has decided that a start should be made in 1949 with the rebuilding of central areas in heavily blitzed cities where plans were sufficiently advanced. He added that "the Government could not encourage anyone to believe that there would be any increase in the labour force or in the amount of steel to be allowed for these requirements." 352

A MICROBIOLOGICAL RESEARCH INSTITUTE, comprising a laboratory building, a pilot plant house and residential flats, has recently been completed in Trinidad to plans prepared by Messrs. W. H. Watkins, Gray and Partners, FF.R.I.B.A. The building is described and illustrated. 356

"NORMAN COURT," a block of 17 flats designed for Hornsey B.C. by Mr. J. H. Melville Richards, A.M.Inst.C.E., Borough Engineer and Surveyor, in association with Messrs. Riches and Blythin, F.R.I.B.A., is described and illustrated. 360

A COMPREHENSIVE survey of the problems and difficulties which require to be surmounted in the field of industrial medicine was given by Lord Moran when he opened the ninth International Congress on Industrial Medicine in London. He listed absenteeism, boredom, discontent and loss of interest as some of the matters requiring investigation by the industrial medical practitioner as a means of establishing the factors undermining the capacity to work, and added that the secret of a contented mind was to do a job well; that pride in craftsmanship and happiness were not unconnected. 362

AN article by Edric Neel, M.A., A.R.I.B.A., on the M.A.F. scheme for Standard Farm Buildings, gives details of the components and describes the means by which the buildings are distributed on a geographical basis. 363

ADDING TO OXFORD

IT is not yet known whether the munificent gift of an anonymous French benefactor of £1,500,000 for the foundation of a new college (St. Anthony's) at Oxford will involve new building or only the purchase of a country house in the neighbourhood. If it is decided to erect a new building we may prepare ourselves for the controversy about "appearances" that invariably accompanies any proposal to add to the University buildings. The architect who has the honour to build for the University generally approaches his task in a state of mind that is best described as a mixture of pride and misgiving. The consciousness that the eyes not only of the University but of the world are upon him is apt to shake his nerve, and it is not to be wondered at that some contemporary and earlier architects have failed to do themselves justice there. To please the Fellows of an individual college may be difficult enough, yet Dr. Arkell, in his important book "Oxford Stone," went so far as to suggest the setting up of "a central architectural panel for the University as a whole, to which all colleges as well as the University authorities should by agreement submit their plans and the proposals of their consulting architects before putting them into effect."

Now, while it is clearly desirable that the right sort of stone should be used for all new work (Dr. Arkell has recommended as being most satisfactory Bladon for walls and Clipsham for dressings), it is unfair to the architect to subordinate him to any "panel," no matter how "competent" its members may be. Their very competence may well be a disadvantage; the knowledge that he has to please, or at least avoid offending, many tastes must tend to make any sensitive architect apprehensive, with the result that he is liable to produce something innocuous, and end by pleasing nobody, least of all himself.

If we are to have good architecture, representative of the genius of our time, we must have more confidence in ourselves. Architects in the past did not hesitate to express themselves and were rarely worried by the self-questioning, the need to placate panels and committees, that hinder and frustrate creative genius to-day. Wren's Sheldonian Theatre, Gibbs' Radcliffe Library, or Cockerell's Taylorian, for example, must have seemed very intrusive innovations in their day, but they have become part of the essential fabric of the University, though, alas, the same cannot be said of Butterfield's polychromatic Keble College which, after nearly eighty years, refuses to be physically assimilated. This is undoubtedly one of the "lost causes."

In one of his more mischievous moments the late Sir Charles Reilly, commenting on the work of one of our "advanced" architects, said: "One of these days he'll get a job to do in Whitehall, and then the fat *will* be in the fire." No one wishes to put the fat in the fire at Oxford. It would be clearly unwise to give a Corbusier or a Frank Lloyd Wright his head there. But the rather timid good taste of a certain amount of the newer work in Oxford is neither representative of the real ability of contemporary architects nor worthy of its unique environment.

If it should be decided to build a new college in fulfilment of the recent benefaction there should be an open architectural competition, with as few restrictions as possible. Good work, whatever the century of its origin, generally contrives to live in harmony with the good of other periods. A first-rate example of modern architecture would enrich Oxford and encourage the development of contemporary style.

THE MARS GROUP ON COMPETITIONS

THE long experience of the architectural profession in the organisation of competitions has gradually brought into practice the systematic Regulations embodied in the document issued by the R.I.B.A. for the purpose of securing the fair and equitable treatment of competitors. Competitions in one form or another have been held since quite early days and several are on record during the Renaissance period in Italy, but from time to time unsatisfactory results led to demands for more definite rules for their conduct, and at present these have reached a stage leaving few loopholes for failure, apart from the inevitable variation in individual outlook. Even this may, in some measure, be avoided by the appointment of two or more assessors or a combination of architects and specialists, both these alternatives being provided for in the Regulations.

It is inevitable that changing conditions will suggest variations and amendments in these Regulations and we now have before us a report submitted to the R.I.B.A. by the MARS Group advocating certain changes (see our last issue, p. 334). After summarising the advantages of the competitive method for the selection of an architect, the report proceeds to point out that though the existing Regulations have proved remarkably successful they are open to criticism and improvement on various points.

It is suggested that more definite divisions should be made between (a) The rules governing competitions in general; (b) Those absolutely binding on competitors; and (c) The clauses stating the problem to be solved, together with the information available and suggestions as to what is desirable. This is reasonable and many of the best drawn-up conditions in the past have followed these lines. It is also suggested that the assessor's report should include a detailed review of at least all the more promising designs, together with the reasons for the ultimate award, and that the report should be made available to the competitors and the technical Press. This would be of value to competitors, but calls for very tactful writing by the assessor, who might easily land himself in a hornet's nest of counter-criticisms. Public exhibition of all the designs is, of course, advocated.

An important factor in competitions at the present time is the change, now probable, in method of construction and the use of new materials; if the assessor is not familiar with these, he should be at liberty to call in one or more consultants qualified to verify the proposals embodied in the design. It might be well to indicate in the conditions the degree of latitude acceptable as to the extent of a departure from traditional methods. The existing Regulations indicate that before conditions are issued, the R.I.B.A. should be satisfied as to the practicability of any new methods or materials suggested as admissible.

The views on the two-stage competition do not greatly vary from those generally held, but there is, in the architectural profession, a very widespread opinion that such a course is rarely necessary, and that the decision could in most cases be made on the designs submitted in the first stage, as the result depends as a rule on the initial solution of the problem and not on the more detailed developments that the final designs exhibit. Probably the few cases in which the double competition has proved advantageous are those where the preliminary designs have indicated to the promoters the desirability of making definite changes in the conditions.

Two proposals were brought forward in the MARS Report, but did not secure inclusion as definite recommendations. The first was that assessors should be anonymous. This, we agree, would not be popular, as competitors like to be able to form their own judgment as to the suitability of an assessor, both as regards the object in view and as sympathetic or otherwise towards their own architectural attitude. The likelihood of success through "playing up" to an assessor's known technique is, we believe, too remote to be worth considering. The other proposal was that an outstanding student might be included on a jury in order to secure an appreciation of recent developments; little can be said against this, except that such a student, if suitable as an assessor, would soon be in the ranks of practising architects.

It is emphasised that all the assessors' reports should be published, but exception may be taken to this. We know of one assessor, well experienced in this capacity, who found it desirable, when suggesting minor improvements in an obviously winning design, to limit these to a confidential communication to the promoters, having once been attacked by disappointed competitors on the grounds that if so many things ought to be done to the design it was surely unworthy of the first place.

NOTES AND NEWS

Sculpture on the Green.

AS an introduction to the art of sculpture the exhibition in Battersea Park, which closed recently, was ideal. No doubt many people to whom the atmosphere of the art gallery would appear depressing discovered in this less artificial environment that they had the ability to appreciate good sculpture. The L.C.C.'s approach was psychologically good, for while the uninitiated are likely to be intimidated by a strange environment, it has been proved many times that their latent powers of criticism may be developed in familiar surroundings. Among the works displayed it seemed that those in stone and marble had found a more satisfactory background in the trees and grass than the pieces executed in bronze or other metals. The work by Dobson, Moore and Mistrovic had a thoroughly arresting quality (the torso by Mistrovic is surely a masterpiece of modern sculpture), the bold lines of the stone proving a fine foil to the natural setting. In the case of the bronze work the contrast was less exciting and the peculiar genius of a sculptor like Epstein does not gain by a verdant setting. Then again, the larger works seemed more æsthetically satisfying than the smaller, which appeared to have been given too much base for their size and took on a rather academic look. The London County Council are to be congratulated on their decision to repeat this type of exhibition in the years to come.

Brighton and "1951."

QUITE obviously the "festival" idea is increasing in popularity. As we look back on a somewhat bleak summer we find that such events as the Regency Festival at Brighton, and the Edinburgh event have assumed a place of their own in the cultural year. Our thoughts go back to August and an extremely enjoyable day spent at Brighton. The pavilion, that fantastic pavilion, was furnished and looking as fine a period piece as we had seen for a long time. The day was fine and the holiday crowds added a gay note to an already amusing scene. Then, after a feast of the eccentricities of Nash, we saw again the stucco classic of Regency-square, Sussex-square and Lower-crescent.

Brighton is not everybody's idea of an attractive town, but such an event as the Regency Festival would put any town in the best of lights; its lesser points seem diminished and much of its original character, character of tremendous charm, is brought forward and given a thorough airing. After the visit we began looking forward to the 1951 Festival in earnest. If this gives people as much satisfaction as the Regency Festival was obviously giving, it will certainly be a complete success.

Exhibition of New Town Proposals.

AN exhibition of the Harlow New Town development proposals is to be opened in October by the Rt. Hon. Lewis Silkin, Minister of Town and Country Planning, at the R.I.B.A., 66, Portland-place, W.1. A large-scale model of Mr. Frederick Gibberd's master plan for the town will be on show. Other exhibits will include models and diagrams illustrating "Work in Progress" in the Architect's, Engineer's and Estate Departments of the Development Corporation. The exhibition will be open to the public between the hours of 10 a.m. and 5 p.m. from Saturday, October 23, to Saturday, October 30, inclusive.

In view of the fact that considerable preliminary work has been afoot for some time on our new towns, many architects are doubtless feeling a little disappointed that little information has been published enabling them to use their ill-exercised critical powers. The "New Towns" have captured the imagination of us all, and in to-day's architectural desert the very names of Harlow, Crawley, Stevenage and the rest seem to carry with them some much-needed message of hope. This exhibition of the Harlow project is very welcome, but what of Stevenage? Certainly an enormous amount of preliminary work

has to be done before architectural form can be given to a project of this size, but it is always nice to know how things are going.

Salisbury Diocesan Training College.

PROPOSED plans for the enlargement of Salisbury Diocesan Training College in the Cathedral Close were approved by the Ministry of Education in April this year. Since then the Ministry has concluded that as the shortage of teachers is so serious high priority should be given to the work by including the residential section in the 1949 programme. The estimated total cost of the project will be £250,000, and the work will include the demolition of the Old Deanery which from time to time has been enlarged and altered to such an extent that it is now unusable for domestic purposes and impossible to adapt for college use.

The new buildings have been designed in the Georgian style by Mr. Curtis Green, R.A., F.R.I.B.A., and, so we understand, fit in with the whole design of the Close in a manner similar to the Cambridge and Oxford colleges.

Autumn Planning Forum.

THE autumn programme of Planning Forum, jointly sponsored by the Association for Planning and Regional Reconstruction, the British Social Hygiene Council, the Institution of Public Administration, P.E.P., and the Town and Country Planning Association, opened on September 22, when Lady Pepler, L.C.C., and Mr. Richard Clements, O.B.E., J.P., L.C.C., spoke on "The Value of Voluntary Societies." Further meetings, which are to be held in the Planning Centre Hall, at 28, King-street, W.C.2, will be held on the fourth Wednesday and second Thursday in each month, at 6.15 p.m. Among the subjects to be dealt with at these meetings will be "What has happened to the London Plans?" "The Kinsey Report," "Population and Emigration," "Work and Health," and "Manpower."

Concert Hall Acoustics.

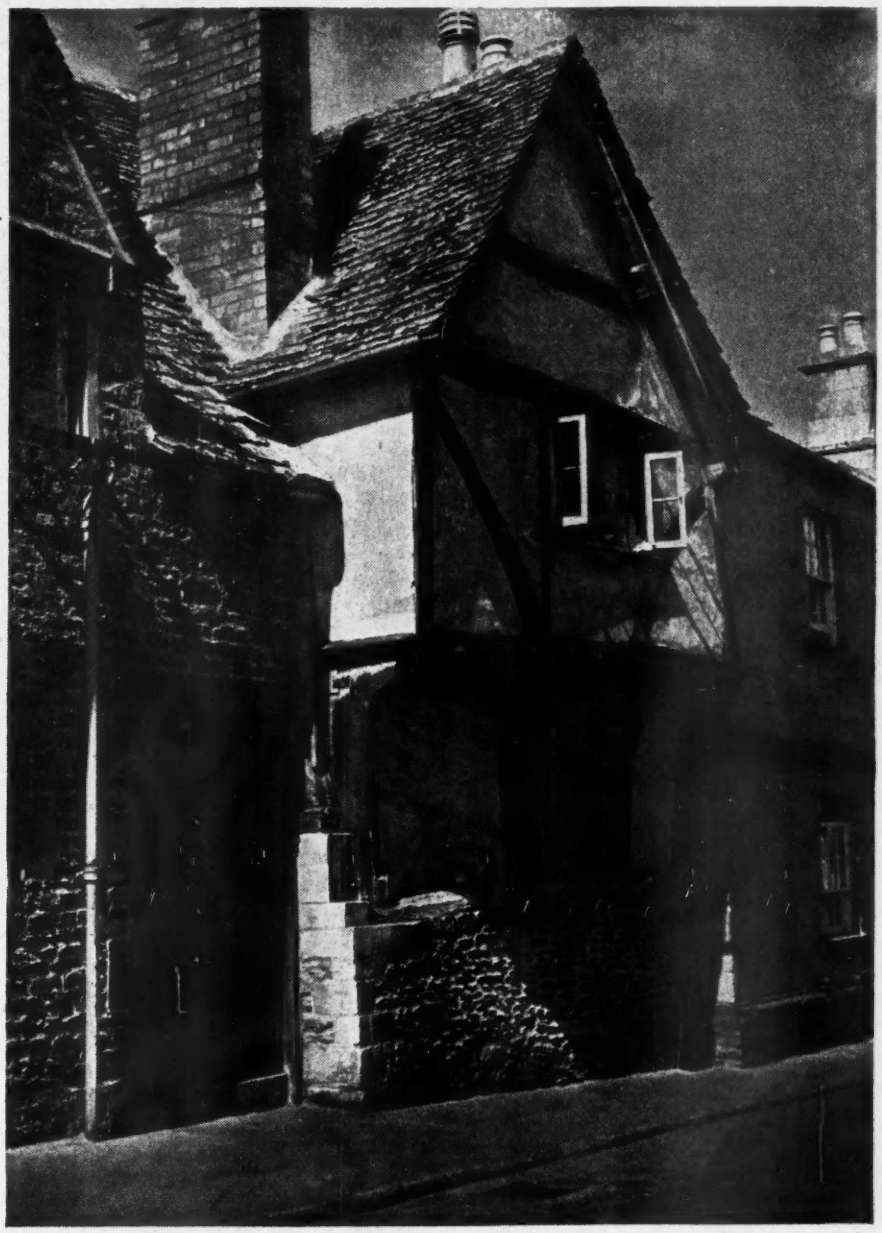
THE Acoustics Group of the Physical Society has arranged a meeting for Thursday, November 4, to discuss modern views on concert hall acoustics. A number of musicians, music critics, scientists and architects will be taking part, and the discussion will be opened by Mr. Hope Bagenal, D.C.M., F.R.I.B.A. The discussion is intended to review the position, particularly in respect of concert halls for London. The meeting will be held at the Royal Society of Arts, 6, John Adam-street, London, W.C.2, at 2.30 p.m.

A Ministry Appointment.

MR. G. S. WHEELDON, F.R.I.C.S., F.A.I., F.V.I., has been appointed Chief Estate Officer in the Ministry of Town and Country Planning. Mr. Wheeldon is a past-president of the Valuers' Institute.

Industrial Conference.

PLANS are now being discussed for holding an international industrial exhibition and conference at the Royal Institute of British Architects in the Spring of next year. The conference is expected to follow the lines of the Schools Exhibition and Conference which took place last Spring. Representatives of the Federation of British Industries and the Trades Union Congress are expected to be asked to take part in formulating the arrangements, and it is hoped that 200 delegates or representatives from overseas, including America and all the European countries, will attend to confer with 200 delegates from British industry. Papers and discussion will be concerned basically with Great Britain's industrial problems and suggestions for dealing with them. The complementary exhibition of industrial buildings is likely to have a strong international flavour.



"THESE THINGS ENDURE," a plastika by H. A. Williams, A.R.P.S., in the 93rd annual exhibition of the Royal Photographic Society of Great Britain being held at 16, Prince's-gate, S.W.7.

Smoke Abatement Conference.

THE Minister of Fuel and Power, Mr. Hugh Gaitskell, will address the annual conference of the National Smoke Abatement Society which opens at Cheltenham on September 30. About 400 delegates from local authorities, Government departments, fuel and other technical organisations, as well as individual members, will be present. A preliminary report will be given of a survey of the sources and incidence of atmospheric pollution conducted by the Society by means of questionnaires to 1,800 local authorities. The programme also includes a series of contributed "progress reports" on work of special interest being done by local authorities.

Statement on Housing Expected.

AN important statement of policy is expected to be made by Mr. Richard Coppock, C.B.E., general secretary of the National Federation of Building Trades Operatives, when he presents a paper on "Housing and the Building Industry" at the annual conference of the Institute of Housing at the Dome, Brighton, on October 15. The conference, which begins on October 14 with an opening address by Mr. H. Symon, Under-Secretary, Ministry of Health, is expected to be attended this year by more than 1,100 delegates, including officers and members of housing committees from most of the important local authorities in Great Britain. Other papers will be given by Mr. A. H. Marshall, City Treasurer of Coventry, whose subject is "The £ s. d. of Housing," and by Miss M. R. Schofield, Housing Manager of Stoke Newington, on "Social Welfare in Housing Administration."

Architect for Welsh Hospital Board.

MR. D. G. WALTON, A.R.I.B.A., of Streatham, recently employed as architect with the Ministry of Health, has been appointed architect to the Welsh Regional Hospital Board at a salary of £1,350, rising to £1,550 a year.

Professional Announcements.

MR. T. N. MITCHELL, B.Arch., A.R.I.B.A., architect to the Middlesbrough Education Committee, has been appointed regional architect to the Liverpool Regional Hospital Board, at a salary of £1,350 rising to £1,550 per annum. He takes over the appointment on December 1 next.

MR. R. T. DAY, A.R.I.C.S., has opened an office at 44, High-street, Brentwood, Essex (entrance in New-road) and will be glad to receive trade catalogues.

MR. R. W. OWEN, F.R.I.C.S., L.R.I.B.A., has relinquished his position as architect to the Docks Engineers, British Railways, Southern Region, and has been engaged by Messrs. Plascott Construction Company, of 146, St. Mary-street, Southampton, as consulting architect and surveyor. He is also in private practice at the same address and would be pleased to receive trade catalogues.

FROM "THE BUILDER" OF 1848

Saturday, September 23, 1848.

THE REGENT'S QUADRANT.—"A Traveller" writes to us as follows:—"Do you not think that the monotonous appearance of the houses of the Regent's Quadrant might be very much relieved by a light ornamental iron balustrade along the upper part, similar to those which are generally adopted with very good effect, in the new buildings in Hamburgh? The upper part always has looked frightful, and when the colonnade is removed will look ten times worse."

COMING EVENTS

Monday, September 27.

THE HOUSING CENTRE.—A.G.M. Address by Mr. Desmond Heap, LL.M., L.M.T.P.I. 13, Suffolk-st., S.W.1. 4.15 p.m.

THE DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH.—Building Science Exhibition. Opening by Sir Edward Appleton, G.B.E., K.C.B. Electric House, Wellesley-rd., Croydon. 11 a.m. Until October 9. 9 a.m. to 5.30 p.m. daily, except Sunday.

Wednesday, September 29.

TOWN AND COUNTRY PLANNING ASSOCIATION.—"Personal Impressions of German Architecture and Planning," by Miss Jacqueline Tyrwhitt, Lady Pepler, Mr. G. Rosenberg, A.R.I.B.A., Mr. Leo de Syllas, A.R.I.B.A. The Planning Centre, 28, King-st., W.C.2. 6.15 p.m.

THE INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—"Research for the Heating, Ventilating and Air Conditioning Engineer," by Mr. Cyril Tasker, M.I.H.V.E. Institution of Mechanical Engineers, Storey's-gate, S.W.1. 6 p.m.

THE INSTITUTE OF WELDING.—Autumn meeting. Discussion on technical training for the associate-membership examination of the Institute, to be opened by Mr. T. R. B. Sanders, A.M.I.C.E. 2, Buckingham Palace-gdns., S.W.1. 2.30 p.m. Dinner-dance, Café Royal. 7 p.m.

WALLBOARD MERCHANTS' ASSOCIATION OF THE UNITED KINGDOM.—Autumn meeting. Hotel Majestic, Harrogate. 2.30 p.m. (Golf Tournament, September 28, at Harrogate Golf Club.)

NATIONAL SMOKE ABATEMENT SOCIETY.—Annual conference. Town Hall, Cheltenham. 3.45 p.m. (Until October 1.)

Thursday, September 30.

THE INSTITUTE OF WELDING.—Autumn meeting. "Some Aspects of Welding Research in Great Britain and America," by Mr. H. G. Taylor, D.Sc. 10.30 a.m. "The Training of Welders," by Mr. F. Clark, M.B.E.; Mr. S. W. Carpenter, and Mr. R. J. Fowler, B.Sc. 2.30 p.m. "The Repair and Reinforcement of Metal Bridges by Welding," by André Goelzer. 6 p.m. Institution of Mechanical Engineers, Storey's-gate, S.W.1.

CORRESPONDENCE

Trade Unionism and Production.

TO THE EDITOR OF *The Builder.*

SIR,—My absence from the office has prevented my writing you earlier about the letters in your issues of September 3 and 10.

Mr. Stapleton first. I agree that no industry on the scale and with the importance of building should be considered on any other basis than that of a social service. Some employers have even expressed the view that building is a social service. If this is Socialism I am content to have it so regarded. I don't mind being accused of having my head in the clouds and do not deny having a political axe to grind. On the contrary. As an active member of the Labour Party I have no hesitation in confirming the possession of such an axe. I deny, of course, all allegations about a social service meaning loss of freedom and all the other unpleasant things said about it. I know my denial will "cut no ice," but your very limited space would prevent me from dealing at length with rival political philosophies.

Mr. Custerson next. To regard profit as wages (even of management) is playing with words. A bewildering number of definitions have been applied to the term "profit," but Mr. Custerson may take it that my definition is a Socialist one—surplus value created by labour.

Finally, "Observer." I am not complaining about the employer's desire to secure a profit. Obviously he must do so, for under the present system of Capitalism he would have no reason to exist as an employer were profit not his motive. I am told I ought to advocate nationalisation of the building industry if I believed what I said. I do!

R. COPPOCK,
General Secretary, N.F.B.T.O.
Clapham, S.W.4.

"Planning for Daylight."

TO THE EDITOR OF *The Builder.*

SIR,—I learn from your issue of September 17 that Mr. William Allen is under the impression that there has been some misunderstanding regarding the matter used in my article (*The Builder*, August 20). I can assure him that that is not the case. It was because the points to which he alludes and all their implications were very fully realised at the outset that my friend the late Professor Sir Charles Reilly encouraged me to investigate the efficiency of the Indicators. When my preliminary report proved unfavourable, he insisted upon my submitting it to his former student, Professor William Holford, as he, together with Dr. Charles Holden, as Joint Consultants, had recommended the use of Indicators in their final report to the Improvement and Town Planning Committee of the City of London. When my investigation had been carried further, Sir Charles arranged for it to be placed before the Minister of Town and Country Planning, in order that it might be considered and that attention might be called to any errors or misunderstandings. So far as I know, none has been discovered. I note that Mr. Allen does not claim that the minor inconsistencies and major defects, to which I called attention, do not exist.

JOHN SWARBRICK.
3, North, King's Bench Walk,
Temple, E.C.4.

Cement for Cycle Tracks.

TO THE EDITOR OF *The Builder.*

SIR,—As a visitor to England and a regular reader of your paper, I was amazed to see, whilst travelling on one of the main trunk roads, workmen busily laying (or relaying) tracks for cyclists alongside the main road.

The portion of the road in question is far from the busy streets of towns and I saw no cyclists on the road at all during my journey.

When I read in your paper of the appeal of the president of the London Master Builders' Association for more cement, and hear on every side of the shortage of labour, I begin to wonder what system of priorities and essential works allows skilled concretors and other labour to use supplies of cement for this purpose when, on the other hand, there are devastated cities showing little or no signs of reconstruction and there is a serious housing shortage everywhere.

Is this sort of thing an exception or one of general practice? One might well ask "Is that job really necessary?" as well as hope for a greater sense of responsibility in the authorities concerned.

A. K. SMITH.
Robin Hood's Bay, Yorks.

IN PARLIAMENT

Rebuilding of Blitzed Cities.

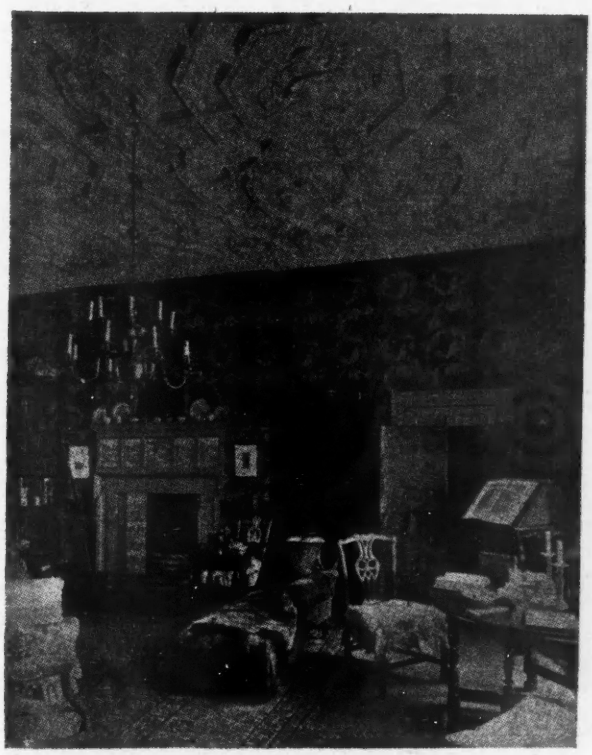
MRS. MIDDLETON drew attention to the urgent need for additional temporary shopping facilities in the war-damaged cities of the country, and particularly in the city of Plymouth. But she pointed out that this policy of temporary shopping facilities was only an interim policy, and that what the areas concerned most desired was that they should be able at the earliest possible moment to rebuild their cities and re-establish their shopping centres on a permanent basis.

MR. BELCHER, Parliamentary Secretary to the Board of Trade, said that in spite of the country's straitened circumstances the Government were agreed that such work should not be indefinitely deferred, and had decided that a start should be made in 1949 with the rebuilding of central areas in the heavily blitzed cities where plans were sufficiently advanced. It must be recognised that resources were strictly limited, and that compared with the size of the job which needed to be done the amount of work able to be done would only be a small proportion of the total requirements, and they could not afford any priority over more urgent national needs. They could not encourage anyone to believe that there would be any increase in the labour force or in the amount of steel to be allowed for these requirements. It would be possible, however, for the licensing authorities to consider applications for modest schemes for the repair and rebuilding of bombed shop premises which did not make any demands on steel supplies. He hoped that this would provide evidence of the Government's desire to do what they could, within their limited resources, to enable these cities to get on their feet again, whether in the matter of their industries or their shopping facilities. He hoped local authorities, the industrialists, and the shopkeepers would go ahead as quickly as possible with the preparation of their schemes for early submission, so so that in 1949 those schemes would be all ready to take advantage of whatever assistance the Government could afford.

A REMARKABLE JACOBEAN MANSION

"Eagle House," Wimbledon

IT is hard to realise that less than a hundred years ago the greater part of what is now inner suburban London, with its traffic congestion, public buildings, interminable streets of small houses and crowded shopping centres, consisted of market gardens and farmland, with private mansions standing in parks enclosed by high brick walls, and scattered villages connected by narrow, dusty lanes. Little of this semi-rural charm is left to-day, but here and there substantial survivals are still to be found of the old villages embedded in the modern development. As, for example, at Wimbledon.



The Library.

The original Wimbledon consisted of the High-street, Church-road, and the Green, at the top of the hill, near the Common (still unspoiled), and hereabouts some of the old-world character remains. There is the "Rose and Crown" inn, dating from the early years of the eighteenth century, and little altered in external appearance; there are several old houses and cottages, some of them with their ground floors converted into shops; a bakery proudly states that it was established in the reign of King George II; a modest little Georgian house with cream-painted bay windows claims the appraising eye; here and there down narrow side passages glimpses are caught of ancient weather-boarding; and an occasional bricked-up window bears witness to the infamous Window Tax. But the most valuable survival is "Eagle House," a stately Jacobean mansion, standing back from the High-street and screened from it by lime trees and wrought-iron railings.

That "Eagle House" should have survived where so much has been destroyed is due to the late Sir Thomas Graham Jackson, R.A., the distinguished architect, who rescued it in 1887 from the hands of speculators who were about to pull it down for "development," and himself lived there for many years. It has now been listed as "a building of special architectural or historic interest" under the Town and Country Planning Act of 1947. Thus, fortunately, it will now be preserved for all time, and the probability is that it will be used partly as the town's museum and headquarters of the John Evelyn Club, the local amenities society. Further possible uses are under consideration, including partial conversion into flats. The house is now in the hands of the Wimbledon Corporation, and is to be repaired under the direction of the Borough Engineer and Surveyor, Mr. T. Webster, A.M.Inst.C.E.

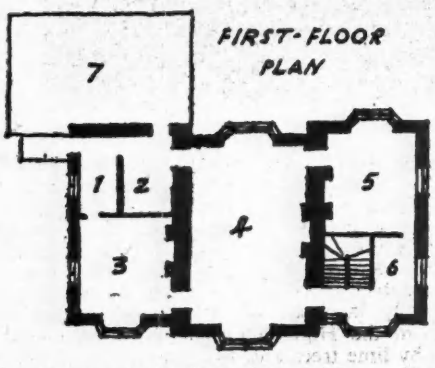
"Eagle House" was built about 1613 by Robert Bell, a citizen and a member of the Girdlers' Company in London and an original member of the East India Company, and it has a unique value as a survival of the smaller rural or semi-rural home of the prosperous London merchant of the early seventeenth century. Sir Thomas Jackson wrote an account of it in "The Wimbledon and Merton Annual"* for 1903, from which the fol-

* Published by Edwin Trim and Co., Homefield Road, Wimbledon, price 2s. 6d. net.

lowing extracts, by kind permission, are taken, and a number of illustrations reproduced:—

"Though no longer standing alone amid meadows and orchards as it did in his day" (writes Sir Thomas), "Robert Bell's '*fayre new howfe*,' as the survey of 1617 describes it, remains otherwise very much in its original state. It is a house of ten gables, built of red brick with stone quoins, and in the lower storey with stone mullioned windows. The cyphers of Robert Bell and Alice his wife, though much defaced, may still be seen carved in relief on square stones in the frieze over the first-floor windows. As in all places where it was not dug on the spot during the Middle Ages, stone is used very sparingly, and the mullions and frames of the upper storeys were, and many of them still are, of oak. Of oak also are the roof and the main timbers of the floors and partitions.

"The plan is unusual and very unlike most English houses of the period, resembling to some extent the plan of the houses at Venice, which possibly Robert Bell may have seen. On each of the three lower floors is, or was till subdivided, a large room from front to back, with a window at each end, and on each side of it smaller rooms with a staircase. None of the best rooms, so far as has been observed, has the walls plastered, the bare walls, when not covered with



1. Ante-room (originally dressing-room).
2. Originally staircase (now removed).
3. Drawing-room (originally bedroom).
4. Great room over hall (latterly the library).
5. Bedroom (Pitt's room).
6. Dressing-room.
7. Eighteenth-century addition (dressing and bedroom).

wainscotting, having no doubt been hung with tapestries or less costly stuffs. As late as 1763 it appears by an old inventory that the principal rooms were wainscotted up to the ceilings, with carved chimney pieces. Above, partly in the roof, are several good attics, with a turret stair to the roof, passing on the way a little chamber curiously concealed from sight.

"But the glory of the house is the series of plaster ceilings, of which there are four, all in perfect preservation, which may challenge comparison with any similar works of the date. The finest is that in the room now used as a library, which measures 31 ft. by near 20 ft., and contains the arms of Robert Bell and his wife. The pattern is unusually rich and intricate, and has that ease and slight irregularity of execution which give these old ceilings a life often wanting in the more regular work of our own day. The other ceilings are all different, two of them certainly not by the same hand as the rest, and one of them of the same design, and no doubt by the same artist, as a ceiling at Audley End. This is an instance of the way in which plasterers of that time went about the country with their patterns of fret-work ceilings, as they were called.

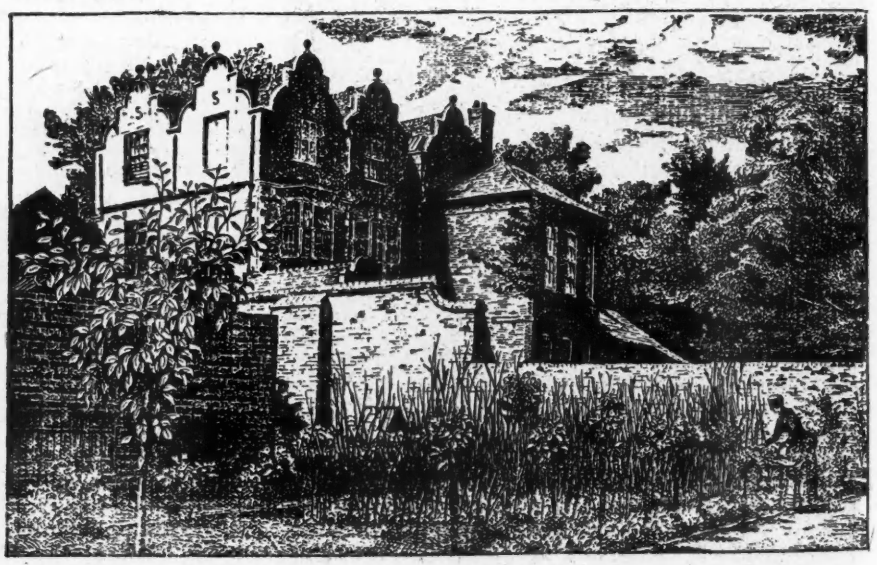
"Of the staircases, one still remains, constructed with massive oak framing of 'post and pan' work, like the staircase of an Oxford college. The other, which was the principal staircase, has unfortunately disappeared and been replaced by a simple one of deal. The original staircase must have been rather splendid. A few pieces of carved work belonging to it remain about the house, and in 1899, when the staircase walls were exposed by the removal of canvas and battening, it was found that, as was often done at that time, the design of the carved newels and balusters was repeated in painting on the walls, from which the whole appearance of the staircase could be recovered. Over the library door also was painted a piece of carved and pierced Jacobean tracery like the cresting of the screens in the Hall and Chapel of Wadham College, Oxford, or those at Crosscombe Church, near Wells, and in St. John's Church at Leeds. The whole of this decoration is painted in oil colour and needed no retouching after exposure.

"Behind the house is the old garden with a raised terrace at the far end—the 'mound' which was a usual feature of a Jacobean pleasaunce—thrown up, no doubt, with the earth from the foundations. A modern lawn has replaced the old formal garden, but in a dry season the eye still seems to trace the lines of the curious knots and parterres where Mrs. Bell grew her roses and gilly-flowers."

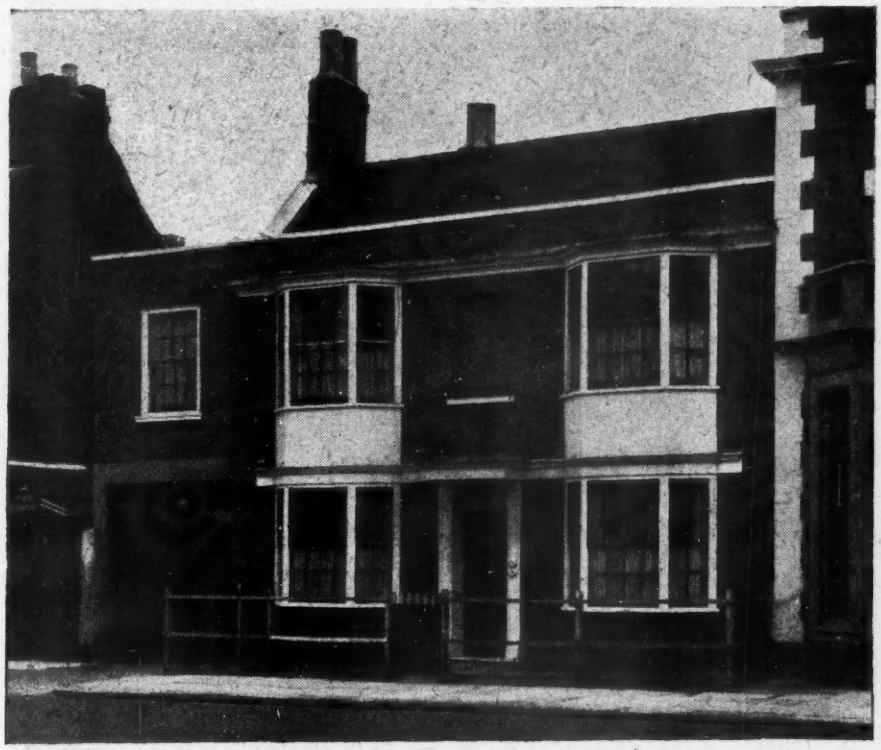
After the death of Robert Bell in 1639 the house was sold and passed through the hands of several owners, some of whom were people of distinction. In 1700 the property was in the possession of Richard Ivatt, Alderman of London, whose family restored the house in the style of the period with the present door cases and chimneypieces, and a wing was added at the back containing a dining-room and rooms over. Unfortunately the addition of this wing involved the demolition of one of the bay windows and the destruction of the fine carved oak staircase. After 1766 the property seems generally to have been let, and Sir Thomas records that the house with 15 acres and the "Rose and Crown" public house which adjoins, then yielding £20 a year, were let for no more than £116 8s. a year. How money loses its value!

The most distinguished resident was probably the Right Hon. William Grenville, William Pitt's relative and

A drawing of "Eagle House" made in 1893.



The Garden of "Eagle House." From a drawing by T. G. Jackson, R.A.



A Georgian house close by "Eagle House."

colleague, who was living here in 1787. Pitt is known to have been a visitor to the house, and a bedroom with a fine plaster ceiling overlooking the garden is traditionally known as Pitt's room. (Pitt, by the way, fought a duel on Wimbledon Common.) Grenville was the last private resident (until Jackson), for in 1789 the house and 17 acres of land were bought for £2,300 by the Rev. Thomas Lancaster, who made the house a boys' school and let off part of the land for building. The little road along the east side of the garden (where, by the way, the late H. H. Statham, some time Editor of *The Builder*, used to live) is still called Lancaster-road.

And now "Eagle House" is touched for a moment by glory and romance. Lancaster became Vicar of near-by Merton in 1801, the year in which Nelson took up residence there. "The relations of Merton Place with the Vicar" (writes Miss Carola Oman in her biography of Nelson) "had been cordial from the first. The Rev. Thomas Lancaster . . . had a younger son whom he hoped to send to sea, under the auspices of his most influential parishioner. On an unascertained morning of this week" (just before Nelson left for Trafalgar in 1805) "Lady Hamilton fulfilled a promise. An open chariot breasted Wimbledon Hill, and drew up outside a handsome house in the Dutch-Jacobean style, to be renamed in honour of this day's occasion 'Nelson House.' Here some favoured young gentlemen in blue coats with brass buttons were summoned to the front parlour and ordered by their clerical pedagogue to recite to the Victor of the Nile, an ordeal which ended happily for all, with a request from the chief guest for a half holiday for the school, and with three hearty cheers for Lord Nelson and Lady Hamilton."

The school continued under the name of Nelson House until it was acquired by a Rev. Dr. Huntingford, who renamed it "Eagle House," after a school so named which he had had at Hammersmith, and when he moved the establishment here he brought not only the name but the Eagle, which still surmounts the front central gable.

As the accompanying photograph shows, something of the character of the original house has been lost by the insertion of sash windows, but the front elevation still has an air of great dignity. Sir Thomas Jackson, in his account of the house, makes no reference to the cement rendering with which this elevation and some parts of the others were covered, presumably in the nineteenth century. This has been stripped off in places to reveal good mellowed brickwork and stone quoins. When this rendering is all removed, the brickwork repaired where necessary and repointed, and some internal repairs carried out, the old house will again look, externally at least, very much as it did when it was built by Robert Bell, well over three hundred years ago and be fit for a new career of usefulness.

Lamenting the destruction of so many fine old houses in the spread of suburban London, Sir Thomas Jackson wrote: "For all that has been thus sacrificed our children will be the poorer, and will have no reason to bless those who have robbed them of so much that would have been interesting. Let us trust that they will be grateful for what little of historical interest will be spared by this destroying generation to gladden their eyes and link their age with the past." Powers of preservation under the Town and Country Planning Act have come rather late in the day, but Sir Thomas would have been glad to know that they had saved his beloved "Eagle House."

G. J. HOWLING.

An Architect's Estate and Bequest.

MR. LIONEL UPPERTON GRACE, F.R.I.B.A., of Worcester Park, left £23,833. Subject to a life interest, he left £2,000 to the Royal Academy of Arts, for the relief of distress among artists of reputation or the widows of such.

SOCIETIES AND INSTITUTIONS

R.I.B.A. Scholarships.

THE R.I.B.A. (Archibald Dawnay) Scholarships for 1948-1949 have been awarded as follows: Roger C. Marshall (Leeds Sch. of Arch.), £65; Kimball Pollit (Leeds Sch. of Arch.), £65; Frank Shaw (Leeds Sch. of Arch.), £65; A. R. C. Johnston (L'pool Sch. of Arch.), £65; A. P. Roach (Dept. of Arch., Northern Poly.), £65; D. P. Whitehorn (Aberdeen Sch. of Arch.), renewal, £65; G. Clayton Smith (Leeds Sch. of Arch.), renewal, £65; Roger Booth (Leeds Sch. of Arch.), renewal, £65; Ian Smith (Oxford Sch. of Arch.), renewal, £65; Gilbert P. Howes (Oxford Sch. of Arch.), renewal, £65.

INDIAN INSTITUTE OF ARCHITECTS

Presidential Address.

INDIA must evolve her own new style of architecture—a style that will be in keeping with ancient traditions and yet suit the needs of modern India. It must be modern in scope, national in spirit and distinctive in character, said Professor S. S. REUBEN, F.R.I.B.A., F.I.I.A., presiding over the first general meeting of the Indian Institute of Architects held at the B.E.S.T. Conference Room, Bombay, on August 12 last. He reminded architects that they had a special responsibility in Independent India, where the housing problem was one of the most acute problems to-day. He deplored the fact that, while Bombay had such magnificent architectural achievements it also contained wretched hovels. It was for the architects of the future to remove this anomaly.

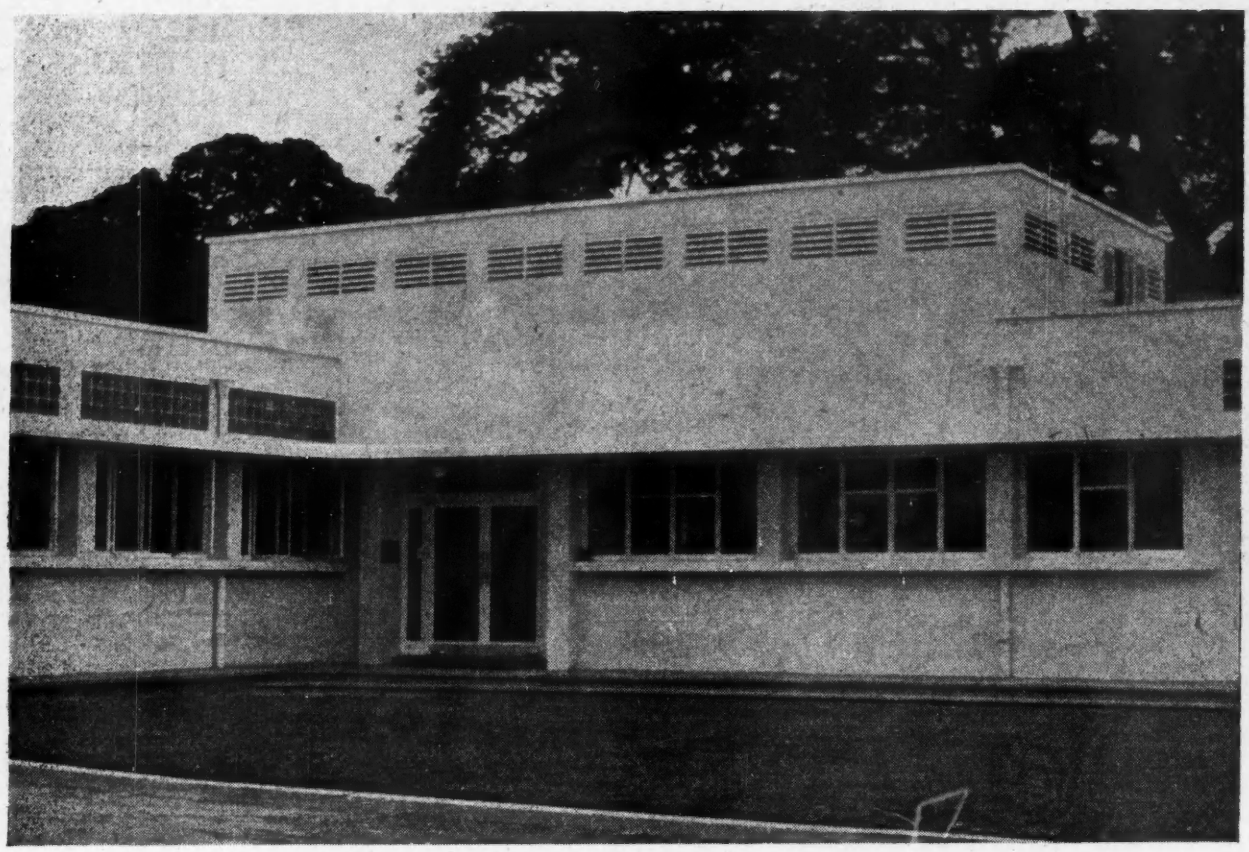
Now that the Government was contemplating finalising the Registration Bill, architects should organise and consolidate their profession by educating public opinion with a systematic programme. Art Education in schools, in his opinion, should be one phase of a greater movement to educate the nation as a whole to a deeper appreciation of art as an essential element in human civilisation.

The problem of town planning and architecture could not be divorced from the other national programmes undertaken or planned by the government. He wished that the government would now realise the necessity of regional planning bodies. He also stressed the necessity for a policy of decentralisation with regard to relieving the burden on cities (especially Bombay) owing to influx of refugees. The President urged the improvement of traffic organisation in keeping up with the pressure on roads to-day, the checking of the tendency to allow coastline to be disfigured by ill-considered building development, pointed out defects in the location of certain vital public institutions, suggested that buildings on arterial roads should be erected only on a set-back of 220 yards, envisaged a better-planned Airport and insisted on the need of national parks as part of the programme of post-war reconstruction.

In the course of his concluding remarks, Professor Reuben stressed the need for more schools of architecture in the various provinces and states and said that it was for the Indian Institute of Architects to give a lead.

Buckland Abbey as a Museum.

THE National Trust is to convert Buckland Abbey into a Drake Naval and West Country Museum. A report is being made on suggested alterations and renovations by Mr. E. G. Catchpole, A.R.I.B.A., City Architect, Plymouth.



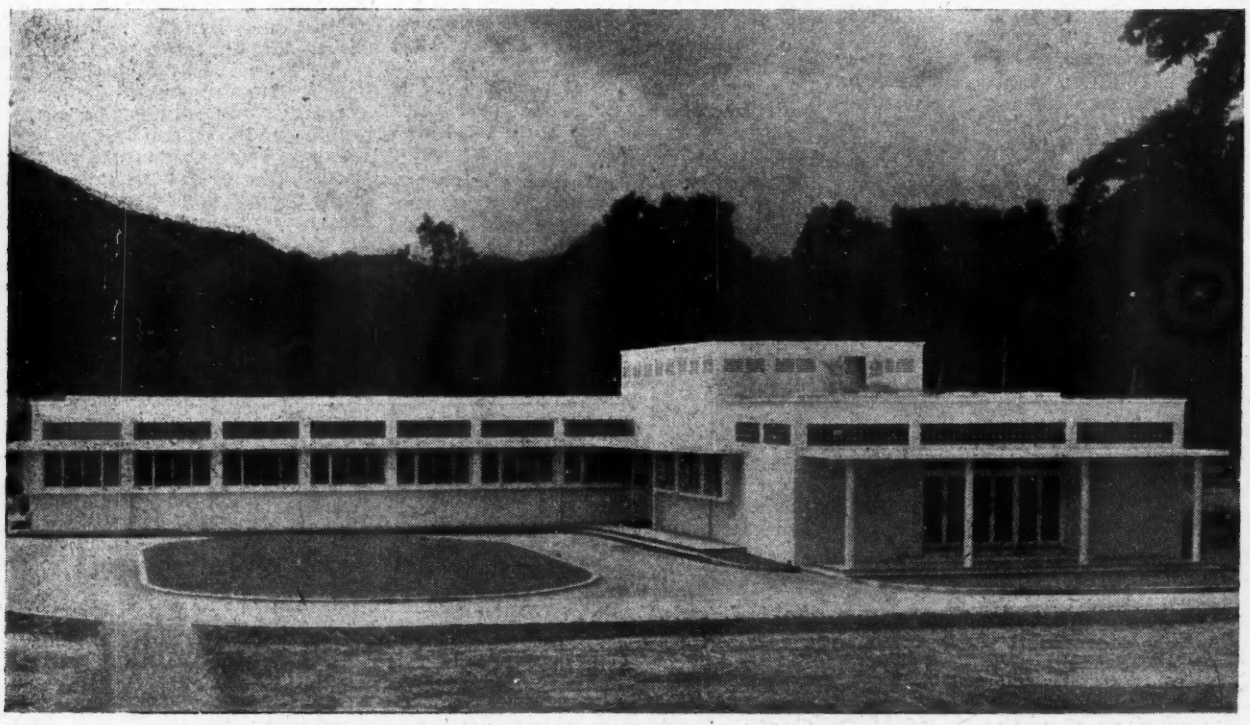
The Main Entrance.

MICROBIOLOGICAL RESEARCH INSTITUTE, TRINIDAD

W. H. WATKINS, GRAY AND PARTNERS, FF.R.I.B.A., ARCHITECTS

THE Institute consists of a laboratory building and pilot plant house for microbiological research, residential flats for the director and technical staff and an engineer's house.

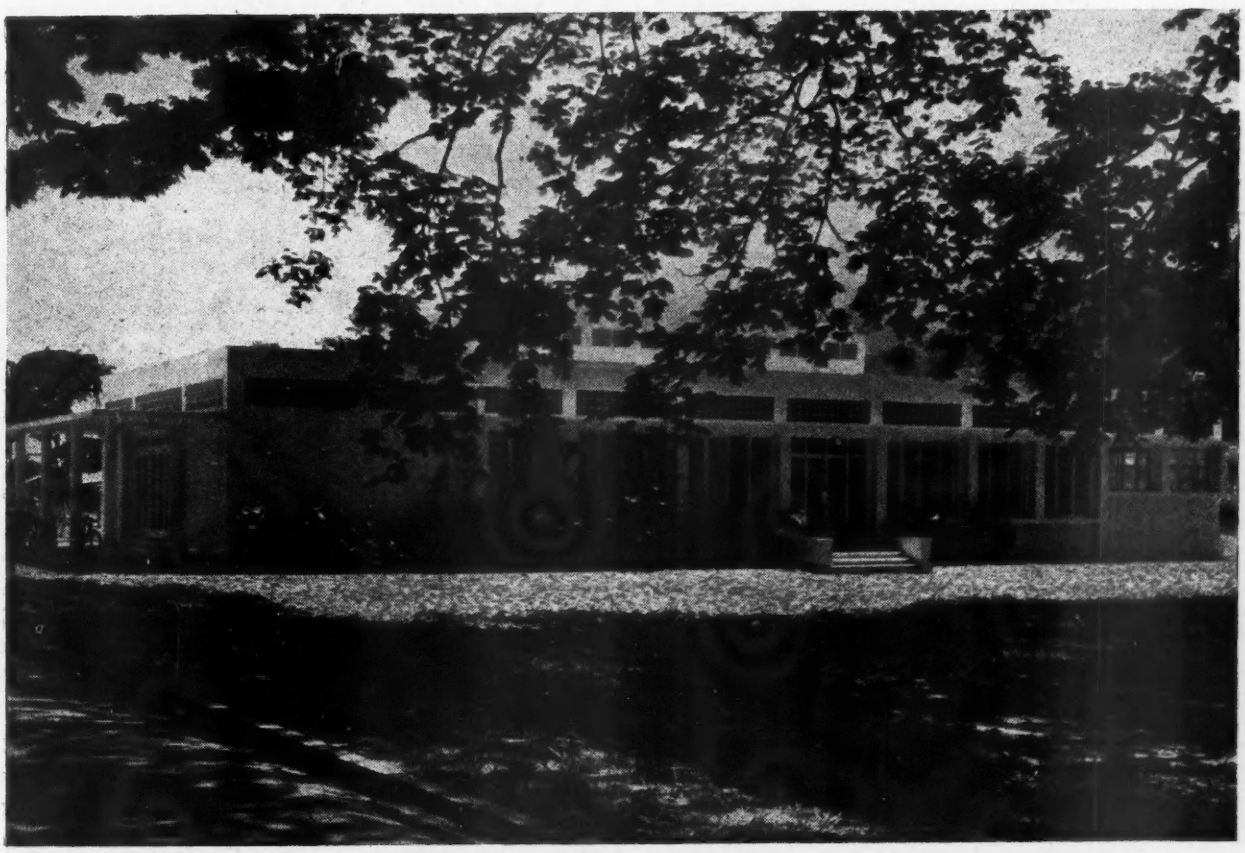
The laboratory contains offices and library and bacteriological and bio-chemistry laboratories, and is planned in an "L" shape which permits expansion of each department.



View from the South.

MICROBIOLOGICAL RESEARCH INSTITUTE, TRINIDAD. View from the North-East.

THE LABORATORIES OF THE Colonial Microbiological Research Institute are accommodated in an L-shaped building situated in Port of Spain, Trinidad, British West Indies, within its own grounds of about six acres. The building contains six separate laboratories, of which one is set aside for chemical and biochemical research, one for the preparation of culture media, one for the maintenance of a culture collection of micro-organisms, and three for general microbiological research. A library, with separate entrance from the grounds, occupies one end of the short leg of the building. This room can be used also as an assembly and lecture room, and is capable of seating about 50 people.



View from the East, showing entrance to general office.

The main entrance to the building is located in the angle formed by the two wings. Facing this entrance is a general office, the secretary's office, and the director's office. Next to the general office, towards the library, is a refreshment room, where light refreshments will be available to the staff during the lunch hour and tea-time. Opposite this is a small rest and first-aid room. The laboratories, a general store, a dark room for photographic work, a balance room and a cold room, maintained permanently at 18 deg. Centigrade, occupy the rest of the building. Air - conditioning is provided throughout, maintaining the air temperature at 78 deg. Fahrenheit, and the relative humidity at 60 per cent. The machinery required for air-conditioning is housed in a penthouse on the roof of the building.

Each laboratory is fitted with the usual laboratory services, gas, electricity, compressed air and steam where required. Correct natural lighting is obtained by means of clear glass windows at sight level, shielded from sun and rain by a contiguous canopy, with a frieze of glass bricks above, which diffuses light at ceiling level.

The scientific staff will include three microbiologists and one chemist. Five technical assistants, a secretary and a librarian will eventually be employed at the Institute.

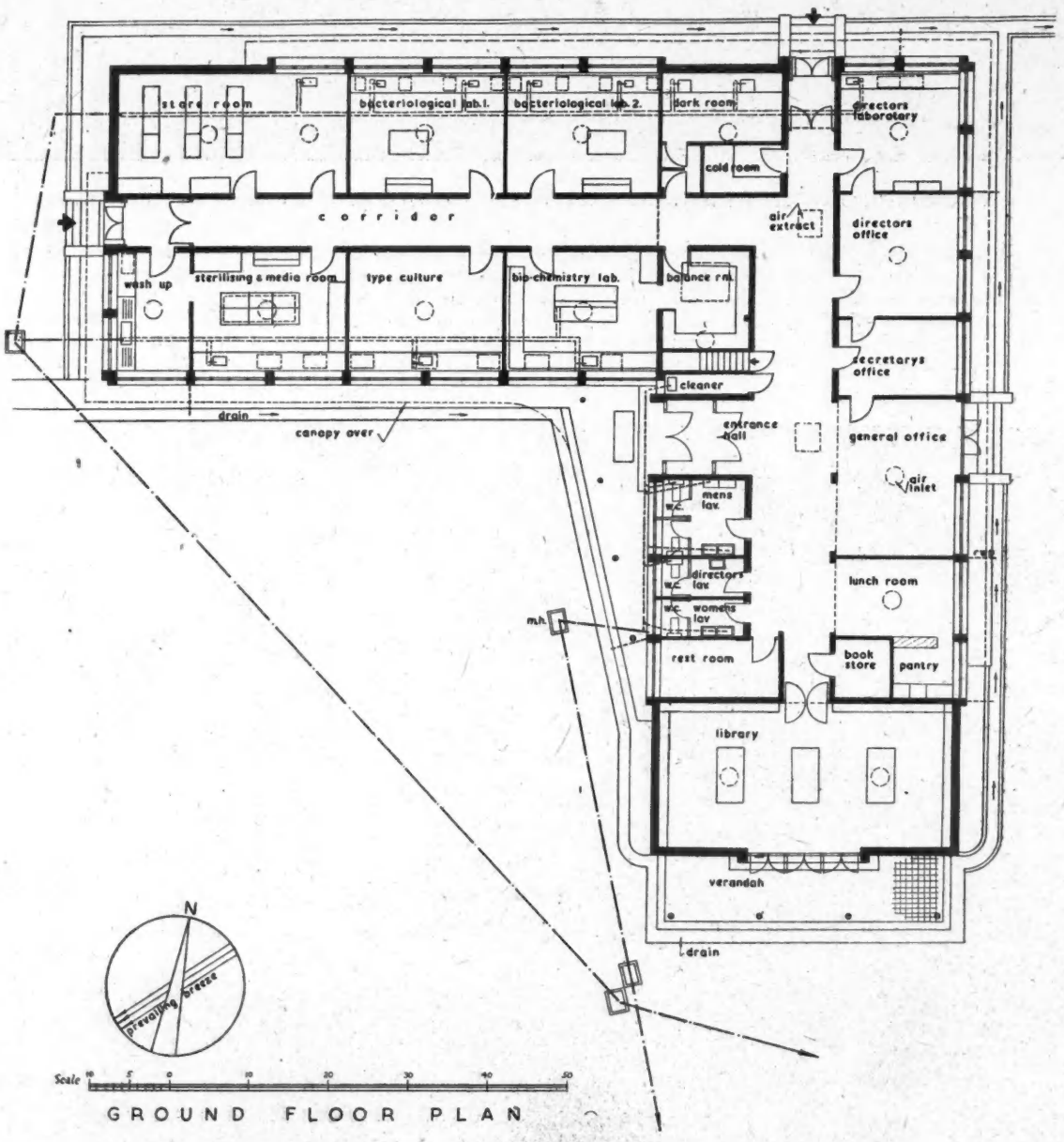
Since some of the investigations which the new centre is expected to undertake may eventually be adopted by industry, it was felt to be important to incorporate a pilot plant in the design of the building.

The pilot plant, when completed, will house, in addition to a complete fermentation plant of 400 galls. capacity, with a separate distillation unit, a boiler house, a gas plant, an air compressor unit and a machine shop.

From the pilot plant gas, steam and compressed air will be supplied to the various laboratories, through underground pipe systems. All equipment for the pilot plant and air-conditioning plants is of British design and manufacture.

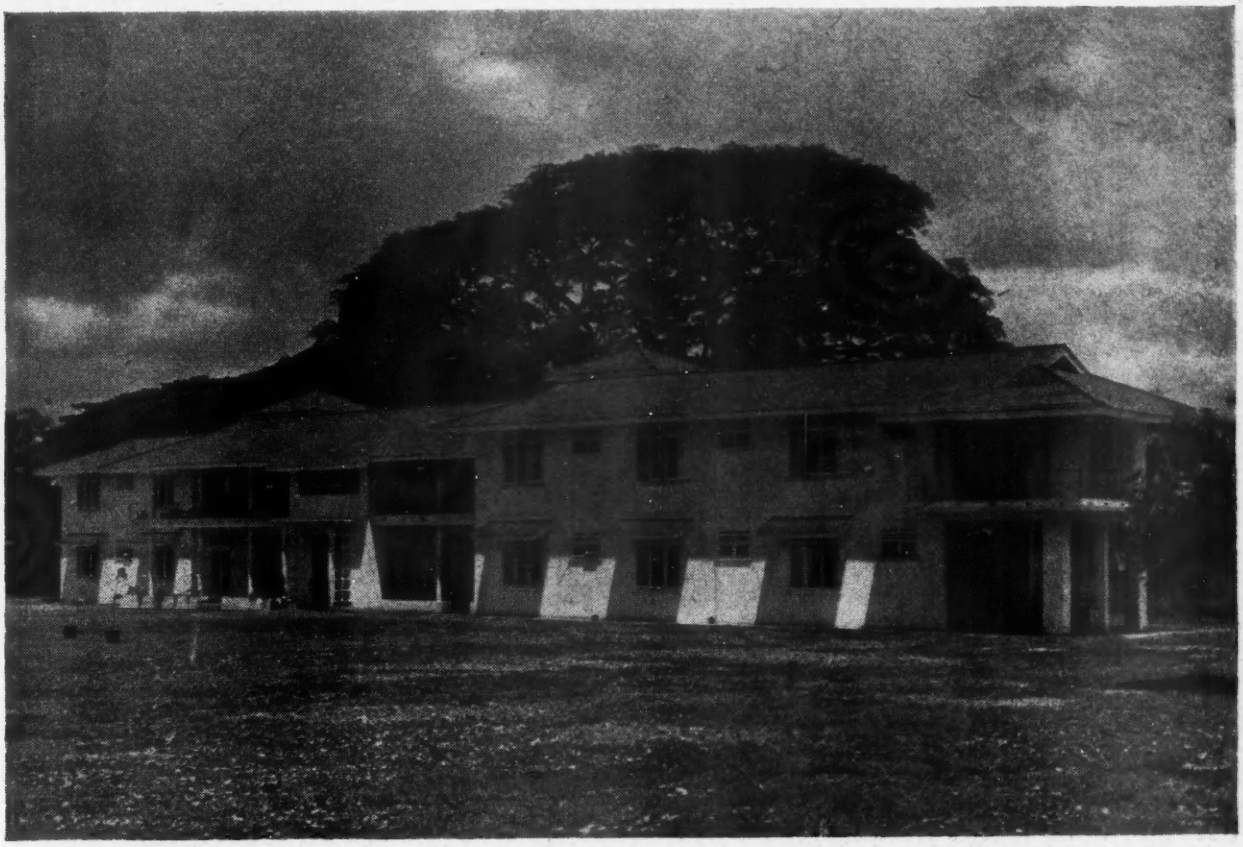
In view of the acute housing shortage throughout the West Indies generally and in Port of Spain in particular, it was agreed that housing facilities should be provided for the scientific staff within the grounds of the Institute. To this end a block of four flats has been erected within the six acres of grounds belonging to the Institute. A bungalow for the engineer has also been erected there.

The construction of the various buildings was commenced early in



GROUND FLOOR PLAN

MICROBIOLOGICAL RESEARCH INSTITUTE, TRINIDAD



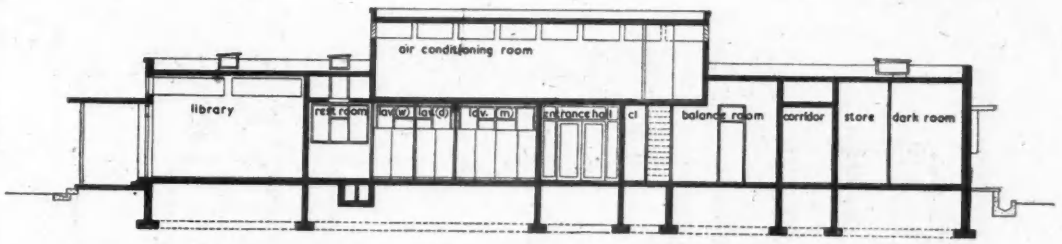
The Residential Flats.

1947, and the Institute was officially opened in July this year.

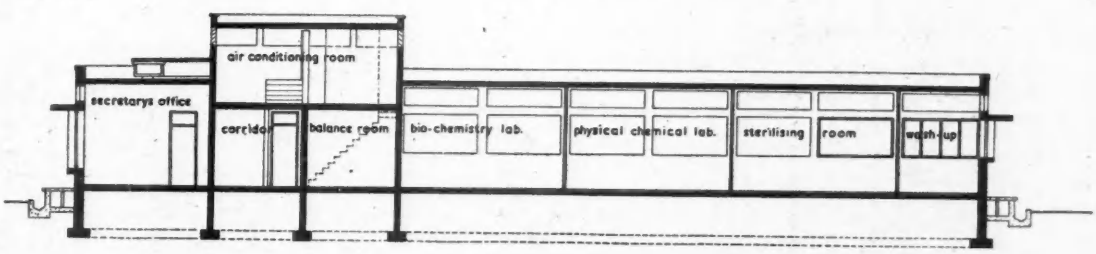
Construction generally is of reinforced concrete with hollow clay block external partitions and walls. Windows are of standard metal casement type and floors are of terrazzo with aluminium dividing strips. Lighting is fluorescent.

The architects were Messrs. W. H. Watkins, Gray and Partners, FF.R.I.B.A. The general contractors were Ash and Watson, Ltd., of Trinidad, and the principal subcontractors were as follows:—

Air-conditioning and engineering, Arthur Scull and Sons, Bristol, London and Trinidad; electrical installation, Masons, Ltd., Trinidad; metal windows, Rustproof Metal Window Company; glass bricks, Pilkingtons, Ltd.; laboratory fittings, Baird and Tatlock.

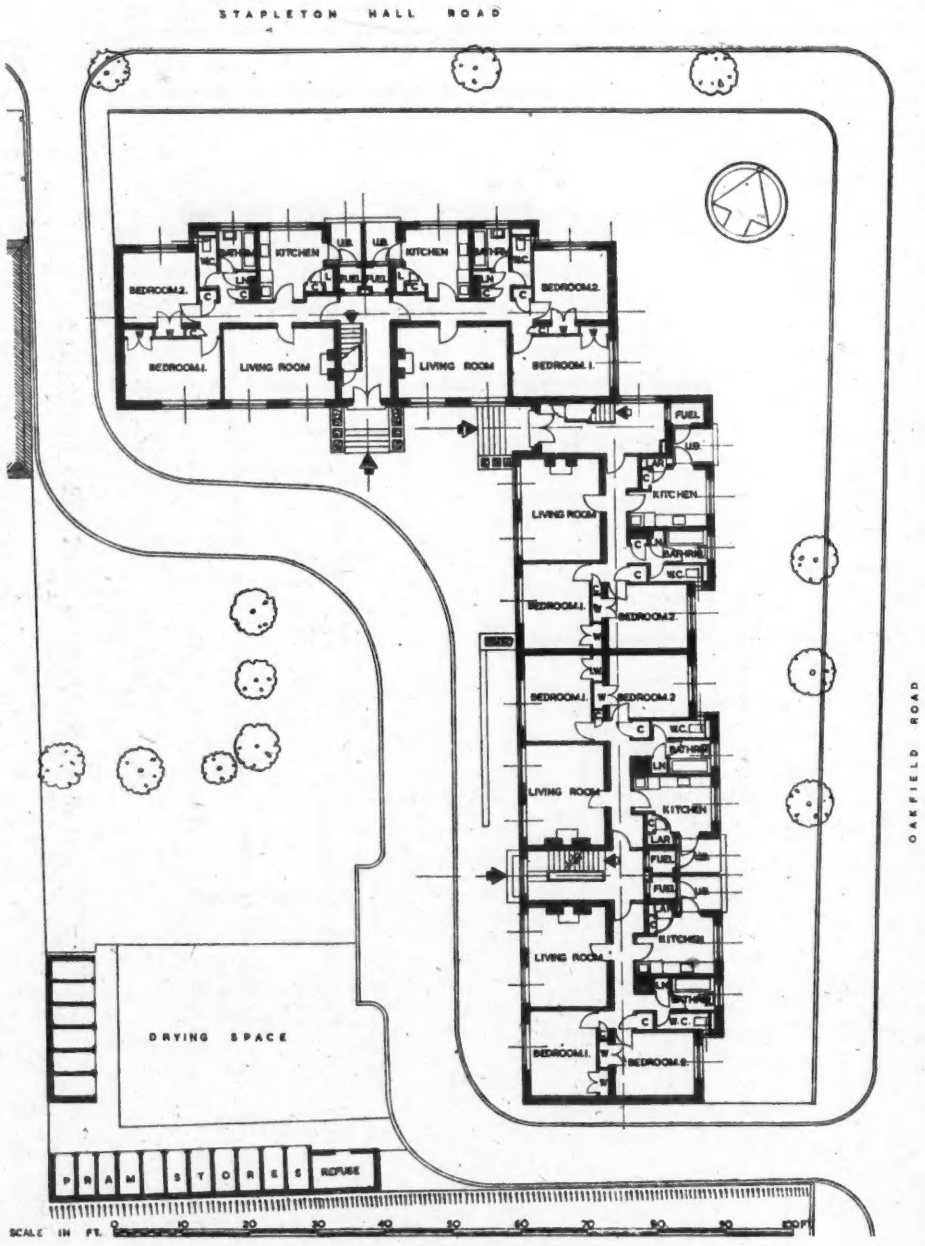


LONG SECTION THRO' SOUTH WING



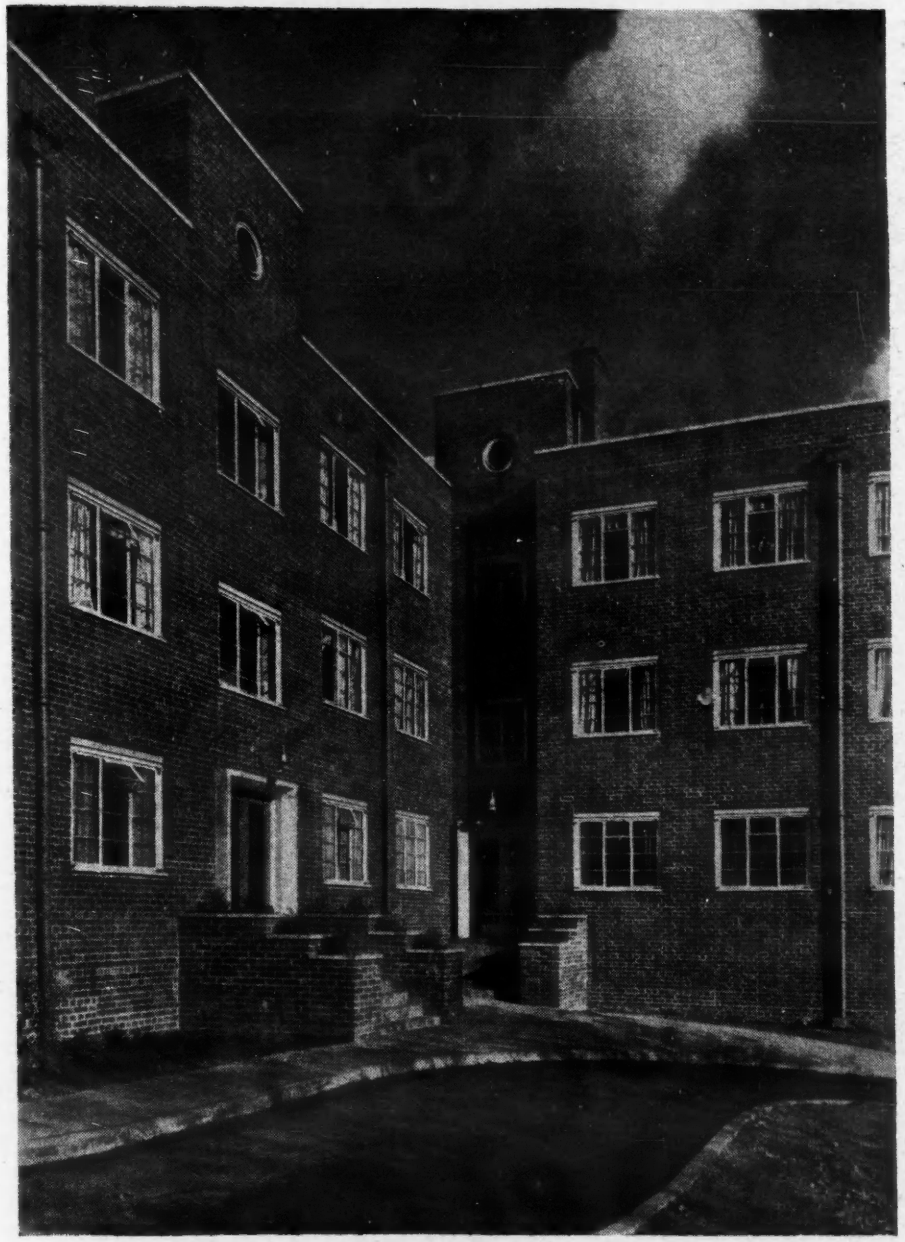
LONG SECTION THRO' WEST WING

MICROBIOLOGICAL RESEARCH INSTITUTE, TRINIDAD



The Ground-floor Plan.

"NORMAN COURT," STAPLETON HALL-ROAD, HORNSEY, N.8.



View in Internal Court, looking North-East.

View in Internal Court, looking North-East.

The East Front to Oakfield-road.

The Ground-floor Plan.

"NORMAN COURT," STAPLETON HALL-ROAD, HORNSEY, N.8.

"NORMAN COURT," STAPLETON HALL ROAD, HORNSEY
for Hornsey Borough Council

J. H. MELVILLE RICHARDS, A.M.Inst.C.E., BOROUGH ENGINEER AND SURVEYOR
in association with
RICHES AND BLYTHIN, F.R.I.B.A., ARCHITECTS

NORMAN COURT comprises 17 flats, each containing a living room, kitchen, two bedrooms, bathroom, separate w.c., utility balcony, and a pram or cycle store in the courtyard with separate lock-up compartment for each flat. It has been designed by Mr. J. H. Melville Richards, A.M.Inst.C.E., Borough Engineer and Surveyor, in association with Messrs. Riches and Blythin, F.R.I.B.A., architects.

Red facing bricks are used for all external walls, and the windows and balcony grilles are painted cream, with rain-water pipes and entrance doors in leaf green. The many modern features which are incorporated provide for smokeless fuel being delivered from the common staircase without entering the flat, and it is stored so that it may be obtained by the housewife from the utility balcony. Access to the fuel store is therefore under cover and immediately outside the kitchen door.

The kitchen is equipped with cooker, work bench, sink and draining-board (in that order), larder, store cupboard, clothes airer, and there is space for a table, wash boiler and refrigerator. Domestic hot water is provided by the solid-fuel boiler in the kitchen, and each flat is equipped with both gas and electricity. Bedrooms have electric plug points and deep built-in wardrobes.

The contract price was £23,912, the average floor area per flat being 737 sq. ft. The bills of quantities were prepared by Messrs. Selby and Sanders, and the general contractors were Messrs. W. W. Rowney and Co., Ltd., of Great James-street, W.C.1. Sub-contractors were as follows:—

Bricks: W. T. Lamb and Sons; cast stone: Empire Stone Co.; composition floors: Marbolith Flooring Co., Ltd.; structural steelwork: Moreland, Hayne and Co., Ltd.; metal windows: James Couper and Co., Ltd.; sanitary fittings: Stitson Sanitary Fittings, Ltd.; ironmongery: Comyn Ching and Co., Ltd.; fireproof floors: The Kleine Co., Ltd.; fireplaces: W. N. Froy and Sons, Ltd.; wood block flooring: Hollis Bros. and Co., Ltd.; flush doors: Flush Woodwork, Ltd.; staircase balustrade: S. W. Farmer and Son, Ltd.; domestic boilers: Crane, Ltd.; asphalting: the Excel Asphalte Co., Ltd.; gas installation: the Gas Light and Coke Company; electrical installation, Sandilands Electric, Ltd.; painting: C. and T. Painters, Ltd.; paint and distemper; I.C.I., Paints Division; plastering: Pollock Bros.; coal hoppers: Haywards, Ltd.; guard rails: Clark, Hunt and Co.; bronze lettering: A. Goslett and Co., Ltd.

THE CONTRIBUTION OF INDUSTRIAL MEDICINE

LORD MORAN'S SPEECH ON "THE ANATOMY OF CONTENTMENT"

A COMPREHENSIVE survey of the problems and difficulties which require to be surmounted in the field of industrial medicine by the medical practitioner and some views on Incentives were given by LORD MORAN when he opened the ninth International Congress on Industrial Medicine on September 13. Among those present at the opening session was Mr. Aneurin Bevan, Minister of Health.

Lord Moran said: This International Congress, the ninth of its kind, but the first in this country, is an educational event, since education only means bringing men in contact with what is first-rate, wherever it may be found. We warmly welcome more than 900 delegates from 46 nations, who have come to talk over what they have learnt from experience and to discuss problems which have not yet given up their secrets. You come inevitably with different interests.

Some have been driven here by intellectual curiosity—science itself has been defined as only organised curiosity—you are curious to know if other workers have unravelled the mystery of the delayed poisoning due to beryllium, or have discovered which of the dye intermediates are responsible for cancer of the bladder in dye-works.

Others are mainly concerned with the organisation of an industrial medical service. You want to see the merits and the shortcomings of the service in this country. We have just started a National Health Service for every man, woman and child in the country, and we hope presently to have an industrial medical service for all who need it. At the present time less than half of our workers have medical supervision while at work and one of the problems before this Congress is the organisation which will be necessary to bring the doctor into the small factory. I am sure, Mr. Minister, you will agree that eventually this industrial service will have to come under the Ministry of Health. For the rank and file of that service must be general practitioners, and they are already responsible to the Ministry of Health. Are they to be employed by two separate Government departments and if the worker spends a third of his time in the factory and two-thirds in his home, is he to have one doctor at home and another at work? You may ask why the health of the worker is not entrusted to the Minister of Health in the first instance. And the answer is that there was no such Ministry until 1918, exactly three hundred years after it was suggested by the Royal College of Physicians.

Training Doctors for Industry.

You will discuss the training of doctors for industry and some of you may advocate a drastic change in the students' education to fit him for the Industrial Medical Service. I am afraid that I cannot agree. I was Dean of a medical school for twenty-five years and when a student came and said to me that he wanted to be a specialist, I used to reply "Get that out of your head at once. It is irrelevant until you are qualified. The only purpose of your training now is to make you a good doctor. We have to persuade you to use whatever gift of observation you may possess, and to reflect on what you have observed. That and no more."

You may say by way of criticism, when you meet some particularly raw recruit to the service, that if he had learnt something about people instead of spending his time learning about rare diseases, he would be more useful to you. And it is quite true that considering the part a knowledge of human nature plays in the worldly success of a doctor, it is strange that medical schools have given so little attention to normal psychology. But it is one thing to plead that students should be taught this subject, and quite another to argue for premature specialisation. What I think the critic has in mind is that the industrial medical officer should be more interested in the psychological problems of the worker, and less taken up with the hum-drum accidents and diseases of industry. Where I think you go wrong is in ascribing this attitude of mind to his training as a student, whereas it is really due to the lack of imagination of the average man. Do we need an illustration of that unimaginative approach to things when we are told that the present shortage of nurses is really due to the neglect of their working conditions in hospitals? Who is responsible for advising about those conditions but the medical staffs? We are not so much oblivious to the health and welfare of the nurses as wanting in imagination.

As for post-graduate education, there must be a consultant service for industry and if a man wishes to be a specialist then he must give up at least five years, after qualifying, to his equipment as such. If, on the other hand, he becomes a general practitioner giving part of his time to industrial medicine, then we are concerned with the minimum standards of training to be enforced in industrial medicine, by some special diploma or the like.

The Value of Research.

And so we come inevitably to research. And I want to put in a plea for fundamental research, the pursuit of knowledge for its own sake. For it is a paradox that those engaged in research who most ignore the insistent calls of the problem of the moment are generally the most helpful in solving our everyday problems. For this research I look to the University chairs.

But if we want an admirable model of research with an immediate application, we shall find it in the industrial Health Research Board which succeeded Sir George Newman's Committee in the first world war. The Board gave us, between the wars, some eighty papers on industrial fatigue, and the length of working hours, and the maintenance of output. And yet their conclusions, though they were fully established, were cheerfully ignored on the outbreak of the second world war by the Minister concerned. I remember finding him distracted by the necessity for a greater output, and handing him the most relevant document the Board ever published. And I remember his impatient comment "But surely there is a war on." He did not believe that men could do more work in six days than in seven.

Looking through the programme, I cannot help noticing a changed conception of the rôle of the doctor in industry. You have brought in the psychologist and the sociologist. Indeed the service might take for its motto Pope's words, that the proper study of mankind is man. Certainly the doctor in industry has a unique opportunity of getting to know the worker, what he is thinking about, and what is his attitude to those for whom he works and to those among whom he works. Nowadays we would say that this was a study in group morale.

But in 1914 when I found myself with a battalion in France, and became interested in the same problem, we used no such words. I began to try to find out what was happening in men's minds around me, and what they thought of this new existence; I wanted to detect the first signs of strain and if possible to stiffen their resistance to it. But primarily I wanted to find out what would make them stick to their job. For if they didn't, they came to me for a pass to the base, and the battalion was very short of men. I asked myself, what makes men work. And that brings me to incentives. If "work or want" has lost its potency, and if religion has lost some of its driving force, we seem to be looking for new incentives. But in 1915 we found that what we called a "good spirit" in the company, a good feeling between the men based on a common loyalty was the best cement for holding men together, and though we now call this "human relationships" we have not really discovered anything better.

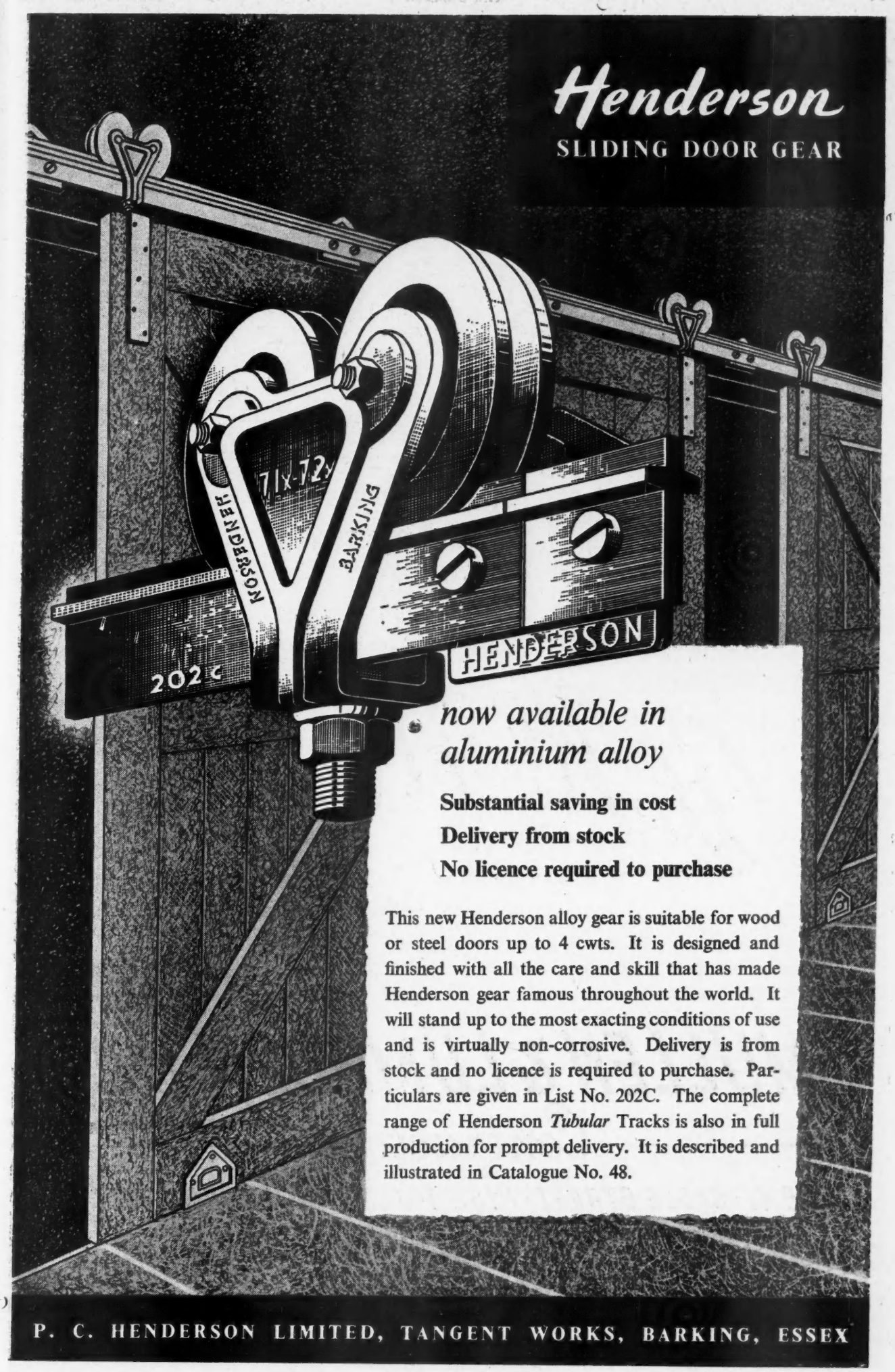
Industrial Content and Discontent.

Some years later I put all this into a little book called the "Anatomy of Courage," and not long ago a head of a great industry asked me to write a similar book about industry, but I had to confess that I did not know enough of that particular field to do this. What doctor in industry will write that book? He might call it "The Anatomy of Contentment." He would probably have to begin, as I did, with the casualties, and find out why they failed to adapt themselves to their environment. He might take absenteeism when it is not due to illness, and trace how far boredom, discontent and loss of interest undermined their capacity to work. And when he knew what was at the bottom of this lack of harmony, he would go on to search for the reason why some men find satisfaction in their work where others wait through the long day for the siren to sound the time for their release. He will not find it in wages alone. It may be that the secret of a contented mind is to do a job well; that pride in craftsmanship and happiness are not unconnected. And we shall look forward to Sir Frederick Bartlett's contribution on the development of skill, and we surely need his help, for if the worker is at once healthy in mind and body, then he is content—and contentment leads to efficient production, which is at the root of social security.

And so I end on this sense of security. I don't think I realised how unemployment used to hover over every worker like a vulture in the sky, until in 1915 I came to sleep in my clothes night after night under the Messines Ridge with one ear open for the sound of a gas alarm. Now that particular form of insecurity has gone, only to be replaced by a dreadful sense of world insecurity. For this the only remedies are contact and education. And this conference, by bringing men together from many lands for friendly discussion, is making its own particular contribution to understanding between the people of the world, without which we are surely lost.

Pamphlet on Planning Act.

The means of claiming compensation and obtaining permission to develop under the Town and Country Planning Act is outlined in a pamphlet published at 6d. by the National Federation of Building Trades Employers, entitled "Town and Country Planning Act, 1947: How it affects the Building Industry."



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M.A.F. STANDARD FARM BUILDINGS

Some Notes on Components

By EDRIC NEEL, M.A., A.R.I.B.A.

IN March of this year the Ministry of Agriculture and Fisheries published designs showing how a limited number of standard components could be assembled to form a range of farm buildings which cater for the majority of the farmers' needs. At the same time, the M.A.F. announced that the standard components would, in due course, be available from stockists all over the country. The article below fills in some of the background and discusses the implications of the M.A.F. scheme.

Plans for the expansion of home food production called for an extensive farm building programme from 1948 onwards, but it was realised that the existing ways and means of getting a farm building erected were a sore trial to the farmer's patience.

Prior to the new M.A.F. scheme, the procedure was as follows:—

A farmer wanting to erect a farm building had designs prepared and obtained estimates either from the local builder or a specialised supplier of farm buildings. Application for a civil building licence was then made to the Regional office of the Ministry of Works. The Ministry of Works referred the case to the local County War Agricultural Executive Committee for comment, who in a large number of cases referred it to the M.A.F. If comment was favourable and the M.O.W. was satisfied that controlled materials and labour were available, the licence was issued. The next stage was the issue of permits for the acquisition of controlled materials, and it was here that the major hold-up occurred. The manufacturer of roof trusses, for instance, had no stock pile to draw on, so before the roof truss could be fabricated the I.S. form had to be placed with the supplier. Fabrication could not be commenced until the steel sections or reinforcing rods were delivered. Thus, however rapidly the licensing routine was handled, it often took up to six months after the licence was issued before erection of the farm building could commence.

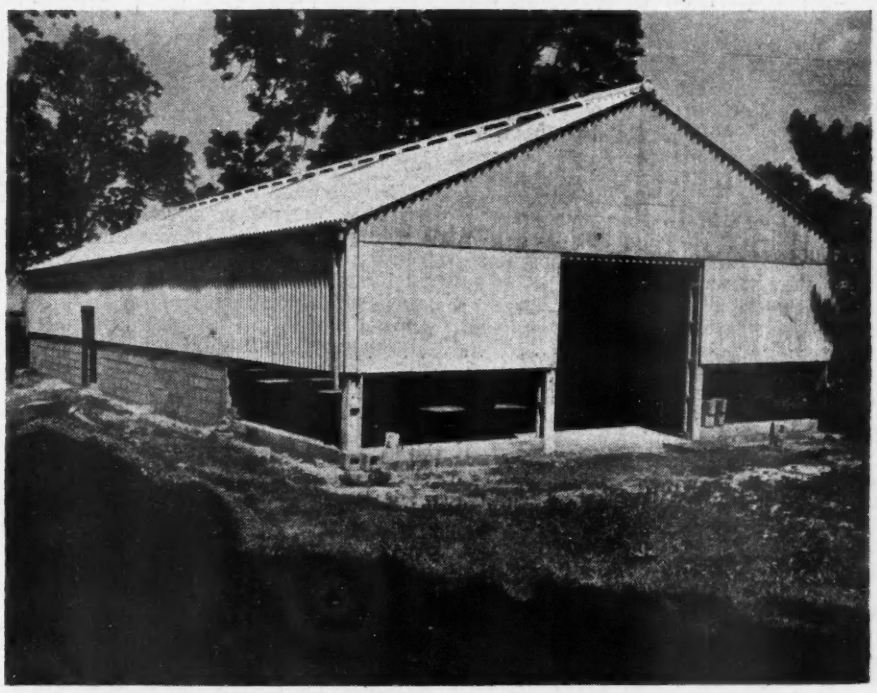
At first glance it might appear that this delay in fabrication could have been minimised by providing the fabricator with a stock pile of steel from which withdrawal could be made as required. There were, however, so many fabricators and so many different methods of constructing farm buildings that this approach would not only have resulted in the dispersal of steel stocks—with no guarantee of consumption in farm buildings—but would also have presented an impossibly complex problem of organisation if the fabricator was to receive from some central allocation exactly the sections required for his particular method of construction.

The difference in methods of construction was not, of course, solely due to the idiosyncrasies of the fabricator; the farmer contributed to the confusion. One farmer required a building 18 ft. clear span. A neighbouring farmer required a building of 19 ft. 6 in. clear span, and from the point of view of the supplier or erector of farm buildings, the customer is always right.

This variety of demand, and consequently variety of supply, combined with the irritation of the farmer at having to wait so long for his farm building, were factors which confronted the M.A.F. Something had to be done or food production would suffer.

The M.A.F. Scheme.

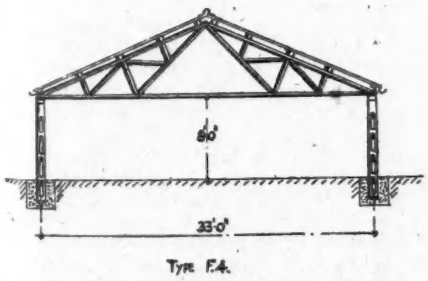
In October, 1947, the M.A.F. established a working party to consider the situation. Clearly some degree of standardisation was a first essential, and in collaboration with the National Farmers' Union and the Central Land Owners' Association it was decided that the bulk of farm needs could be met by providing a building of a clear span of either 17 ft. 6 in. or 32 ft. 3 in., an eaves height of 8 ft., 12 ft. or 16 ft., and a running bay dimension of 15 ft. The reasons for the adoption of these dimensions are intriguing but outside the scope of this article. Suffice it to say that the dimensions of the cow and of the combine harvester were given equal consideration.



A Farm Building, 33 ft. span, built of M.A.F. standard components.

With the consumer requirements known, it was possible to state the problem as follows: (1) To design standard components which could be assembled into buildings of the dimensions stated. (2) The standard components to be available in a variety of materials and yet be interchangeable one with another. This in order to take account of the changing material supply position. (3) To arrange for the production of the standard components. (4) To arrange for the storage and distribution of the components on a nation-wide scale.

In order to tackle these problems, the working party was broken down into two sub-committees, one concerned with design and one with distribution. The M.A.F., however, made it clear from the start that while they would give every



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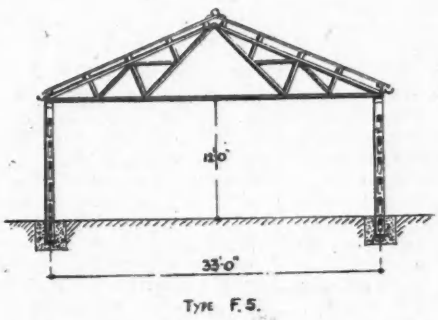
Courtesy of B. Finch & Co., Ltd.



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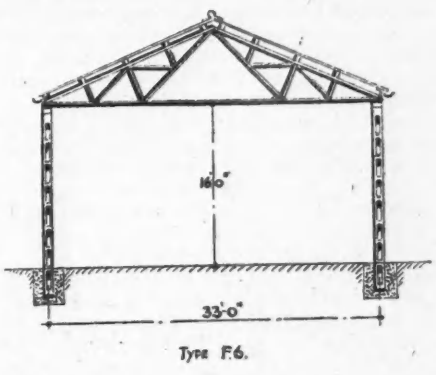

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Standard Farm Buildings of 33 ft. span.

assistance by way of propaganda and licence control, the scheme as a whole was intended to be implemented by private enterprise. In other words, official bulk orders were "out."

General responsibility for co-relating the design of individual components was vested in the M.A.F. Architects' Department. In the detailed design of components appropriate specialist manufacturers joined the technical sub-committee and gave freely of their time, advice and experience. In this way the framework elements—steel trusses, purlins, eaves beams, wind bracing and sheeting rails; reinforced concrete posts, purlins and eaves beams—were designed and cleared for production. Next, attention was focused on the cladding elements; the asbestos-cement sheeting, the Perspex lay lights, the windows and the doors. Eventually, these efforts produced components for the two main bay sizes required, bays which were extensible indefinitely and with or without gable or side wall sheeting, doors and windows.

In all components the principle of interchangeability has been maintained, and the technical sub-committee remains on call to advise on the use of materials other than those now available, as and when it appears desirable to incorporate such materials.

Manufacture and Distribution.

With only a certain amount of controlled materials available for allocation to farm buildings, it was essential that manufacture and distribution should be along limited and defined channels. This, to ensure economical production and to avoid dissipation of stocks. The invidious task of selecting these channels was undertaken jointly by the M.A.F., the British Concrete Federation, the English Joinery Manufacturers' Association and the Metal Window Manufacturers' Association as regards manufacture, and Building Industry Distributors as regards distribution.

Thanks to good will on every side, a workable pattern was evolved, and as the scheme stands now there are 16 builders' merchants—geographically located to provide countrywide coverage—acting as main stockists.* Each main stockist orders his components from the nearest manufacturer and, after consultation with B.I.D., may, if appropriate, supply substockists. The distribution scheme is not, however, entirely limited to B.I.D. stockists in that the position of the agricultural engineer has been recognised by reserving 20 per cent. of the component production for purchase by agricultural engineers on terms similar to those available to B.I.D. stockists.

Formal control of the scheme by the M.A.F. is by their power to influence the issue of building licences or permits for controlled materials. But both manufacturers and distributors have undertaken not to dispose of M.A.F. components at prices other than those previously agreed with the Ministry.

For the time being the M.A.F. components make little demand upon new steel, with the exception of reinforcing bars. The standard steel roof trusses, purlins and eaves beams are made from second-hand sections formerly incorporated in Morrison shelters.

The M.A.F. scheme is still in its early days, and indeed it is probably only now that all stockists have all components in stock. But although the volume of business is still small, it is apparent that the simplification inherent in standardisation lifts a good deal of the burden off the farmers' shoulders.

The main stockists have issued catalogues and price lists for the various M.A.F. components, and once the farmer has decided on the type of building he wants, an erector can, at very short notice, estimate costs. The delay incurred by producing special drawings and obtaining estimates before a licence application can be submitted is thus substantially reduced. Moreover, when the licence is issued, stockists can deliver components to site at 24 hours notice.

Time alone will show the extent to which farmers avail themselves of the facilities offered, but the technicians will recognise that this approach to the farm building problem has implications for the future. The whole pattern is essentially English in its mixture of informality and good will, and it is something of an achievement that a workable commercial pattern should have been evolved without recourse to the cumbersome machinery of "priority" and without digging into the taxpayers' pocket. Needless to say, a pattern implies a designer, and here tribute must be paid to Mr. P. J. Moss, a principal of the M.A.F. As chairman of the Working Party, he has, with uncommon patience and persistence, steered the scheme through many troubled waters.

* The list of stockists was given in *The Builder* for March 5 last.—ED.

BOOK REVIEWS

THE PLANTAGENETS: 1154-1485. By John Harvey. Pp.xii, 180. Illustrated. (B. T. Batsford, Ltd.) Price 18s. net.

MR. HARVEY has already written two books, *Gothic England* and *Henry Yevele*, describing the architecture of the Plantagenet period, which have aroused much attention. In this volume he turns to the lives of the thirteen kings of that remarkable family and endeavours to picture their careers and personalities from a more human and general point of view. The interest of his study is enhanced by a fine series of illustrations culled from a variety of sources—stained glass, paintings, illuminated MSS., sculptured effigies—and admirably reproduced. As the announcement on the jacket claims, "the whole series is so full of individuality and character that it is impossible to doubt its authenticity as portraiture."

The origin of the Plantagenet dynasty is traced back, in a genealogical table printed as an end-paper, to the mythical "Tortulf the Woodman" in the ninth century, but the line of kings treated here begins with Henry II and ends with Richard III. The thirteen reigns are grouped into three sections, each section being introduced by a chronological table in which social and political events are related to buildings and works of art. Appendices give examples of contemporary poetry and letters, and a concluding bibliographical note cites the most important authorities.

This review is not concerned with the historical accuracy of the author's biographies. He does not contribute much to our knowledge of the Plantagenet kings as great builders and patrons of the arts. Apparently he assumes that the information is available elsewhere, e.g., in regard to Henry III (p. 60). He does state, however, that Henry II enlarged Waltham Abbey, that John built London Bridge and a chevet at Beaulieu, that Edward III rebuilt St. George's Chapel at Windsor, that Richard II erected or roofed Westminster Hall and built the new nave of the Abbey, that Henry IV ordered the central tower of York Minster to be reconstructed, and that Henry VI founded both Eton College and King's College, Cambridge. Otherwise, there is little here to describe the share taken by the monarchs in erecting the masterpieces of Gothic architecture. Nevertheless, the book provides many amusing anecdotes of the Plantagenet kings, telling us that Henry II doodled in church and that Richard II may have invented the pocket-handkerchief. Their private lives, their marriages, their foibles and their often extravagant expenditure are duly chronicled, as well as the social, political and military events of their reigns.

M. S. B.

ARCHITECTURAL CONSTRUCTION, by Theodore Crane, C.E., M.A. (London: Chapman and Hall, Ltd.) Price 36s.

THE economy and often both the service and the appearance of a structure depend on the preliminary choice of appropriate structural portions of a building, as governed by the geographical location, site conditions, type of occupancy, equipment, and architectural design. This American publication presents a procedure for determining the type of building frame, foundation, floor, roof, and wall construction most suitable to meet the requirements of any particular structure. The text is written for students in architecture, architectural engineering, and building construction, and for practising architects and architectural engineers who wish for a comprehensive résumé of all the better types of construction now available in the American market, with recommendations concerning their specific applications.

PILING FOR FOUNDATIONS. By R. R. Minnikin. (Crosby Lockwood and Son, Ltd.) Price 15s.

IN this book the author has set out all the useful points of pile-driving within his own experience and that of colleagues in the professional field and the research laboratories. In a foreword he states that the book was written in order to assist the engineer in relating field experiences to office analysis.

OBITUARY

R. A. Easdale, A.R.I.B.A.

WE regret to record the death of Mr. R. A. Easdale, aged 81, at Castleford, Yorkshire. He was president of the West Yorkshire Society of Architects in 1944, served on Wakefield Diocesan Board of Finance, was a founder-member of Castleford Rotary Club, and President of Pontefract and District Musical Festival. Besides being an architect and surveyor he was a water-colour artist and a violinist.

John Laurie Carnell, F.R.I.B.A.

WE regret to record the death of Mr. John Laurie Carnell, F.R.I.B.A., aged 76, at his home, St. Clair, Graywood-road, King's Lynn. He was senior partner in the firm of Carnell and White, chartered architects, of Paradise Chambers, King's Lynn, and retired in April, 1947. Mr. Carnell served his articles in Exeter, became assistant to the late Mr. Herbert Green at Norwich and took over his practice when he died. He was a Fellow of the Norfolk and Norwich Association of Architects, a Rotarian and a member of the Society for the Preservation of Ancient Buildings.

THE USE OF ALUMINIUM ALLOYS IN BUILDING

Paper read at British Association Meeting

THE use of aluminium alloys in building was described in detail by MR. E. T. BRIMELOW, of the Chief Scientific Adviser's Division of the Ministry of Works, in a paper* read before the British Association meeting at Brighton on September 14. Mr. Brimelow said:—

The structural use of metals and, indeed, the dependence of engineering in general on the use of metals, are of quite recent origin. Desch (1) in his introductory Cantor lectures to the Royal Society of Arts in 1940 gave an historical account of developments leading to the use of metals as engineering materials.

Early use of metals in building was for decorative rather than for structural purposes and excavated statuettes and temple objects in copper or bronze, some dating as far back as 3500 to 3000 B.C., reveal the skill achieved in working these metals. Among the non-ferrous metals the use of lead dates back before the Christian era, and in the Science Museum, South Kensington, are exhibits of lead water pipes used by the Romans and of the type known to have been manufactured from the first century B.C.

The Chinese, about 300 B.C., had learned the art of making castings in iron, and the store of iron ingots found in the palace of Sargon at Khorsabad date from the eighth century B.C., but there is no evidence of their structural use in those days. Difficulties in handling, working and welding large masses of metal no doubt account for this and it was early in the eighteenth century before cast iron was used structurally in this country.

Against this historical background, aluminium and its alloys make a unique entry into the field of building materials for both structural and non-structural applications. A child of research and a comparative newcomer among metals, it has, mainly as a result of scientific work done in the last sixty years, achieved a status among engineering materials comparable with older metals and alloys. The first few grains of aluminium were isolated by the Danish physicist Oersted in 1825. In September, 1947, an all-aluminium span of the Massena, N.Y., railway bridge was erected. This complete 100-ft. span weighed only 24 tons as compared with 57 tons for each of the three similar steel spans of this bridge. It is interesting to compare these weights with the weight of 378 tons for the first cast-iron bridge, also of 100-ft. span, built in 1797 by Abraham Darby, over the river Severn at Coalbrookdale.

Present-Day Production.

The achievement of so much in so short a time is largely due to the rapid growth of the aluminium industry. Based on a successful partnership between science and industry, this vigorous new enterprise has expanded from a world production of about 100 tons per year in 1890 to a present production of over one million tons per year.

Since 1938 the aluminium fabricating industry of this country, closely linked with an expanding aircraft industry, has increased five-fold. With a total war-time capacity of about 350,000 tons of aluminium semi-manufactures a year (equivalent in volume to a million tons of steel), this country has risen from fifth to second place among the world's light-metal fabricators. This increase in production has been accompanied by a gradual reduction in price from £12 per lb. in 1855, the price of aluminium exhibited at the Paris exhibition in that year, to just over 8d. per lb. to-day. This reduction in price of aluminium and its alloys has been a major factor in the wider application of this material to building. In this connection it should be noted that aluminium is unique among materials of construction in that its price is lower than it was before the war and, on account of the rise in the prices of other materials, is now the cheapest of the non-ferrous metals per unit volume.

Although aluminium and magnesium are two of the most abundant elements, forming 10 per cent. by weight of the earth's crust, the question of future supplies of raw materials is of vital concern to the industry since its extraction as pure metal depends on large resources of supply of electrical power. With our stocks of virgin aluminium considerably reduced and the amount of scrap available for remelting very much depleted, it will be essential, if we are to maintain our production of fabricated metal, to import most of the aluminium required for remelting, since we can only rely upon a home supply of 30,000 tons of virgin aluminium.

Structural Use of Aluminium Alloy.

The changeover from war to peace-time production has been carefully analysed by Devereux (2). Although the total production of semi-manufactures in the United Kingdom for the first quarter of 1948 was 30 per cent. lower than for the same quarter of 1944 (when the war-time peak production was achieved), there have been corresponding increases in certain fields of products, e.g., sheet and strip 14 per cent., foil 60 per cent., gravity die-castings 17½ per cent., and pressure die-castings 117 per cent. Comparative figures for extrusions, however, showed a decrease of 60 per cent. These figures reveal the trend in peace-time application, and in particular the high demand for sheet material has been due, to a large extent, to the increased use of aluminium cladding for such items as the aluminium house. The fall in percentage output of extrusions on the other hand would indicate that the demand for extruded structural members for building and other applications has not been sufficient to satisfy the available production capacity.

Shortages of materials such as cast iron, steel, lead, and timber have, in post-war years, created large demands for alternative building materials. These conditions have been favourable to the wider application of aluminium and its alloys and it will be shown later how far it has been possible to satisfy those new demands.

Details of the mechanical properties of aluminium alloys, with special reference to their use in structures, have been given in papers by Forrest and Smith (3) and by Hardy and Watson (4) to the Institution of Structural Engineers, and it is proposed now to refer only to certain important features of this subject in so far as they have influenced the use of these materials in building.

Metallurgical research to meet the demands of the aircraft industry for high-strength aluminium alloys has resulted in recent years in the development of new alloys such as those covered by Specification B.S.STA.M.AW16A, which has a minimum ultimate tensile strength value of 35 to 38 tons per sq. in., 0.1 per cent. proof stress of 30 to 33 tons per sq. in., and an elongation value of 5 per cent. Corresponding values for mild steel used for structural purposes are: ultimate tensile strength 26 to 32 tons per sq. in., yield strength 15 to 18 tons per sq. in. and an elongation of 20 per cent. Tensile strength, however, is not the only criterion in assessing a metal for structural purposes and, for many applications, alloys with lower strength properties would be useful, provided they satisfied other requirements such as good resistance to corrosion. The strength and stiffness of a structure cannot be calculated simply from the strength of its component members. Shear strength or bearing strength, depending on whether riveted or pin joints are used, may be just as important. In addition, the behaviour of a structure under compression is very different from its behaviour under tension. In the former, the slenderness ratio or buckling factor becomes very important in the design of struts and columns.

Aluminium alloys have a modulus of elasticity varying between 10 and 10.8 x 10^6 lb. per sq. in. for extruded material and is about one-third the corresponding value for mild steel. This value for Young's modulus cannot be altered appreciably by alloying (the highest value is 11.8 x 10^6 lb. per sq. in. for certain wrought aluminium-silicon alloys) nor by heat treatment, and bears no relationship to the ultimate tensile strength. Because of the lower value of this constant, aluminium beams of deeper section compared with steel must be used if the same deflection characteristics as the steel beams are to be obtained. An aluminium alloy beam of similar shape to a steel beam will be about one-third of the weight of the latter for equal strength. To obtain equal deflections, the moment of inertia of the aluminium beam has to be increased, and this may be accomplished by increasing the depth to 1.4 times the depth of the steel beam and increasing the flange area by 50 per cent. The weight would then be about 50 per cent. of the steel beam. The requisite inertia could also be obtained without increasing the flange area if the depth of the beam was increased to approximately 1.7 times the depth of the steel beam. From the structural point of view the lower modulus of elasticity for aluminium as compared with steel is an important difference between the two materials, and for load-bearing members such as beams it will be necessary to redesign steel sections for the use of aluminium in such a way as to achieve the desired structural characteristics in the most economical way. On the other hand, an aluminium alloy structure will have a greater degree of resilience on account of its low elastic modulus, and this is advantageous because of the greater ability of the structure to withstand impact stress and results in the reduction of secondary stresses in stiff-jointed structures.

Work by Baker and his co-workers at Cambridge into the behaviour of structures when deliberately overloaded

* Crown copyright reserved.

through the plastic range of stress to failure has yielded valuable information on such questions as allowable working stresses, factors of safety, importance of ductility, and of the value of the ratio proof stress to ultimate tensile strength. The results of this work (4) would indicate that under static loading conditions there is no need to allow a higher factor of safety because of the lower values of ductility and high proof stress to ultimate stress ratio. Forrest (2) has, however, suggested that in structures subjected to fluctuating loads or vibration, such as bridges where fatigue is a possible mode of failure, precautions are necessary because the implications are that, with high-yield-strength materials, secondary stresses over a considerable part of the structure will be higher, relative to the fatigue properties of the material, than would be the case with a low-yield material. The simple precaution of providing gussets and cover plates in an alloy with a relatively low yield strength should enable one to guard against failure.

As far as possible, without limiting the scope of the design, it is desirable, for purposes of economy and ease of production, to standardise aluminium alloy structural sections, and a British Standards Specification (B.S. 1161-1944) has been published (6) which gives dimensions and tolerances for standard extruded sections.

Architectural Uses of Aluminium.

In choosing a material for a building or structure it is not sufficient that it should possess the desirable physical properties, but certain æsthetic aspects which affect the design of the building must also be taken into account (7).

The influence of materials on architecture has been recognised. The introduction of new materials, such as steel, concrete and aluminium, provide from the architectural point of view a certain amount of flexibility in planning. The use of stressed members in the form of frame construction has tended to replace the solid weight-bearing wall and enables a free use of walls and partitions. Large openings or windows in walls are made possible and "straight-line" architecture can be broken down by projecting canopies, cantilevered floors and recesses. Additional scope is also provided in roof design since large spaces can be covered easily and economically. With the additional quality of light weight (sp. gr. of aluminium 2.63 to 2.79 compared with 7.8 for steel, 8.8 for copper, and 11.4 for lead), aluminium would materially assist this modern trend in architectural planning. It is for applications such as roof trusses of large buildings, arches of wide span and bridges, where the chief factors in the economical use of aluminium are light weight, ease of transport and reduction in erection time, that aluminium alloys are most attractive.

Use of Aluminium in Housing.

In the design and production of the aluminium house or aluminium "temporary" bungalow we have a unique example of the adoption of a new material to meet emergency building requirements. The production and erection by May, 1948, of 54,000 of these houses has demonstrated the useful possibilities of prefabricated aluminium structures and has been the means of establishing a new industry in this country.

In each of these houses, about 1¼ tons of aluminium in the form of sheet strip, extrusion and castings are used, and it has been stated that this programme has taken about 40 per cent. of the industry's sheet, strip and extrusion capacity. For the extruded members a secondary alloy, covered by specification D.T.D. 479, was used, which, in the heat-treated condition, gave a minimum ultimate tensile strength value of 22 t/in.², 0.1 per cent. proof stress of 14 t/in.² and an elongation of 8 per cent. The sheet material 20 or 22 S.W.G. had a core of material to specification D.T.D. 479, clad with aluminium of minimum 99 per cent. purity for additional protection against corrosion. An interesting feature of the construction was the "in situ" casting of a foamed cement slurry into the assembled wall and partition panels formed from extruded sections and rolled strip riveted together. The filling used was carefully selected to give adequate sound and thermal insulation. The panels were sprayed internally with hot bitumen before filling, and the panels subjected to steam or hot-air curing. Investigations to date have shown the aluminium bungalow to be an efficient dwelling, and the Ministry of Health, in agreement with local authorities, has ordered 15,000 "permanent" aluminium houses similar to the "temporary" buildings, but with certain slight modifications to improve thermal insulation and to minimise the risk of condensation.

Interesting developments in aluminium buildings as a result of the experience gained with the aluminium house are seen in prototype school buildings based on prefabricated unit construction and aluminium bungalows for use in the tropics, where, in addition to ease of transportation, proof against attack by insects and resistance to rot and distortion are additional advantages of aluminium construction. Projects are also in hand for two-storey houses, using factory-built wall, floor, roof and ceiling units, and for multi-storey buildings, employing a prestressed, precast concrete frame and factory-built wall, floor and partition panels. These new designs aim at conserving the use of traditional building materials such as timber and steel, while keeping total erection and building costs competitive with traditional types of buildings.

Roof Construction.

Aluminium as a roofing material has not competed, until recent years, with lead, zinc, copper and galvanised iron to any appreciable extent in this country. Actual service experience (5) in America, Switzerland, Germany, Italy and Australia during the last 50 years has confirmed that this material, with its light weight, adequate strength, good thermal insulating properties, resistance to atmospheric corrosion and versatility of form, is a very suitable roofing material.

Provided suitable aluminium alloys such as those covered by B.S./STA.7/A.W.3C (an aluminium alloy containing 1 to 1.5 per cent. of manganese) or B.S./STA.7/A.W.15 (aluminium-clad alloy) are chosen for roof sheeting, a satisfactory service life can be expected under normal atmospheric conditions, even without additional paint protection. Under severe conditions of service, such as in a maritime atmosphere, or in a highly polluted industrial atmosphere, additional paint protection would be advisable.

In view of the shortage of timber, several designs of roof trusses are under consideration. The roof of the aluminium house referred to above was formed of two trusses and two trussed purlins constructed of extruded or rolled sections bolted to the walls and spine partitions and covered with aluminium alloy panels 2 ft. 6 in. wide, each panel being covered with a layer of insulation and faced internally with aluminium alloy sheet. Suitable alloys for these extruded sections include A.W.10.B., B.S./STA.7, which, although not one of the high-strength alloys, has in the fully heat-treated condition a minimum ultimate tensile strength of 18 tons per sq. in., 0.1 per cent. proof stress of 15 tons per sq. in., and 10 per cent. elongation. High strength alloys such as A.W.15, B.S./STA.7 have also been used, but on account of their lower corrosion-resistance require painting and regular maintenance.

In aluminium roof construction, however, precautions must be taken against electrolytic corrosion, by careful choice of nail and rivet materials, by avoiding copper fittings, and by galvanising or cadmium-coating all iron and steel nuts, bolts and similar fittings in contact with the aluminium. Allowance has also to be made, in the case of large roof spans, for thermal expansion; the coefficient of thermal expansion of aluminium varying between 22 and 24 x 10^{-6} per degree C. (as compared with 17 x 10^{-6} per degree C. for copper, 26 x 10^{-6} per degree C. for zinc, 29 x 10^{-6} per degree C. for lead and 12 x 10^{-6} per degree C. for iron and steel) is approximately twice that of steel. However, with Young's Modulus only about one third of that of steel, temperature stresses induced in an aluminium structure for a given rise in temperature will be slightly less than two-thirds of those in a similar steel structure.

An interesting application, still in the experimental stage, is that of roofs supported by air-pressure, for long span building construction (8). Tests made at New York University in 1944 indicated that enormous roof spans could be made with the minimum of structural materials. Structures ranging from 300 to 1,800 ft. diameter for storage warehouses, industrial and amusement buildings, where clear span and low cost were important factors, have been investigated. An 800 ft. diameter roof in aluminium sheet 0.109 in. has to be supported by an air pressure of 0.06 lb. per sq. in.

Selection of Alloy.

Reference has already been made to suitable aluminium alloys used for specific building applications, but a few general comments on the selection of alloys may be useful. Difficulty has often been experienced, by those desiring to use aluminium alloys for the first time, in the selection of suitable alloys from the large numbers of proprietary alloys available. The position has been clarified to some extent by the work of the British Standards Institution, which has drawn up British Standards giving specific ranges of chemical composition and condition of material. Each of these specifications may be satisfied by a number of alloys with different proprietary names. This Institution has recently taken a further step forward by drafting, in collaboration with the industry, trade associations and Government departments concerned, schedules for cast and wrought aluminium alloys for general engineering purposes. The primary purpose of these specifications is to ensure a reasonable standard of quality of material and they do not state which alloy is the best for a particular purpose.

Final choice of an alloy for a particular application depends, apart from economic considerations, on many

factors, including method of manufacture, such as whether cast or wrought product, nature and extent of stresses, if any, to which components will be subjected in service, type of atmospheric or other corrosive conditions to which material may be subjected, and surface treatment such as anodic treatment or painting, or method of jointing such as welding, to be applied.

Secondary alloys, made up from refined remelted scrap, are available, and when they comply with approved specifications are satisfactory for many applications. These secondary alloys have, however, a higher impurity content than the primary alloys of the same type and, as a consequence, have a lower resistance to corrosion.

A convenient method of grouping aluminium alloys is according to their inherent corrosion-resisting properties. Generally the high-strength copper-containing alloys, which attain their tensile strength properties by heat-treatment, have the lowest resistance to corrosion. Alloys free from copper as an alloying addition and which, in the case of wrought alloys, rely upon definite amounts of cold work for their strength properties, have the best corrosion-resisting properties. This classification was adopted in the report of the Light Alloys Sub-Group of the Admiralty Chemical Advisory Panel, Group V (Metallurgy) on Aluminium Alloys for Naval Use ([10]).

Durability.

The question of durability is frequently raised in discussions on the suitability of aluminium for buildings. Aluminium alloy sheet used in buildings has been known to fail within a few months of service when in direct contact with damp alkali-containing building materials such as cement and concrete, and electrochemical or electrolytic corrosion attack can occur under certain conditions when aluminium is in contact with iron, copper or even dissimilar aluminium alloys. The causes of these isolated cases of corrosion are well known and they can be avoided by taking suitable precautions such as by painting or by preventing direct metal contact with an insulating layer of impregnated fibre. Both laboratory and actual service experience have shown that aluminium and many of the aluminium alloys of the non-heat-treatable type available in sheet or extruded form have a greater resistance to corrosion than steel and cast iron, and compare favourably with zinc, lead and copper in maritime and severe industrial atmospheres. The deterioration in surface appearance which occurs when these alloys are exposed to the atmosphere is due to very slight superficial corrosion and does not lead to any appreciable deterioration in the strength of the material. With the higher strength alloys of the heat-treatable type, extra thickness of metal would be necessary to allow for the "pitting" type of corrosion attack which occurs on prolonged exposure under severe conditions, or additional protection provided by surface pre-treatment such as anodising and painting. An even more dangerous form of corrosion, to which all types of alloys, and heat-treatable alloys in particular, are susceptible in the presence of certain corrosive media, is intercrystalline corrosion, which usually occurs when the material is subjected to internal or external stresses. The danger of this type of corrosive attack is that it may occur by localised penetration into the metal along the grain boundaries leading to loss in ductility and strength, without any visible signs of surface corrosion. Once again, however, risk of failure by this cause should not be exaggerated since the danger can be avoided during production by careful control of the thermal treatments given to the material.

As mentioned previously, aluminium, like zinc and lead, is attacked in the presence of moisture by contact with building materials such as concrete, cement, mortar and plaster, which liberate lime on setting. Portland cement is most aggressive but aluminous cements and slag cements which do not liberate lime on setting are less liable to cause trouble. The presence of calcium chloride in concrete, added to accelerate drying, or of magnesium cements rich in chloride, and often hygroscopic, is most dangerous. Aluminium should, therefore, be protected from this type of attack by a thick coating of bituminous paint or by wrapping with bituminised paper or similar insulating material that is impervious to moisture.

When it is necessary to paint aluminium, either for purposes of additional protection because of the alloy selected for particular service conditions, or for æsthetic reasons, care is necessary in the preparation of the surface in order to obtain good adhesion. It is preferable, when it can possibly be arranged, to prepare the surface and apply at least the first or priming coat of paint at the manufacturers. Suitable processes for site preparation are, however, available when necessary. Anodising, as carried out under specified conditions, provides one of the best surfaces for paint. It is not always practicable to apply this process to large or complicated surfaces, nor is it suitable for all aluminium alloys, but other suitable proprietary chemical processes can be used. Details of these, together with details of suitable paints, lacquers and enamels, have been published ([11]).

Fire Resistance.

The relatively low melting point of aluminium and its alloys, 659 degrees C. for pure aluminium compared with structural steel with a melting point of about 1350 degrees C., has given rise to a certain amount of anxiety with regard to the fire risks involved in using aluminium structural members. In a fire, however, strength properties would begin to fall off rapidly at much lower temperatures. It is usual, when designing steel structures, to allow a working stress of not less than 8 tons per sq. in. at 450 degrees C. This stress is the yield point of steel at this temperature which may therefore be regarded as a limiting temperature for a fully loaded steel structure. The corresponding limiting temperature for aluminium alloys is of the order of 225 degrees C. when the proof strength will have fallen, in the case of high-strength alloys, from about 26 tons per sq. in. at room temperature to 11 tons per sq. in. It would therefore be necessary, in order to ensure a standard of fire-resistance comparable with that of a steel structure, to take additional precautions by surrounding aluminium stanchions with a thicker casing of concrete or envelope of insulating material. The higher thermal conductivity and specific heat in the case of aluminium may be additional factors governing the period of safety, but in the case of a fire within a building with a high output of heat, it is doubtful whether they would have a significant effect. The risks in the case of aluminium roof structures and roof coverings are not so great since the melting temperature is sufficiently high to avoid dangers from external sources, and fire resistance is probably better than other roofing materials such as lead, zinc and timber.

Non-structural Uses of Aluminium.

The versatility of form in which aluminium and its alloys can be produced in the form of castings, forgings, sheets or plates, as extruded, rolled or drawn sections and bars, and in the form of tubes or hollow sections, enables it to be used for the reproduction of artistic designs and for many architectural purposes. Applications, more often seen abroad than in this country, include railings, grilles, spandrels, pilasters and cornices. Lightness, resistance to atmospheric corrosion and freedom from staining adjacent surfaces are favourable properties of aluminium for these applications.

An interesting example ([12]) of the large-scale use of cast aluminium spandrels is the Rockefeller Centre Group in New York, where 1,660 tons of aluminium cover 17 per cent. of the external surface. After ten years' service in a severe industrial atmosphere, and without any maintenance, these spandrels are now indistinguishable from the stone wall owing to the collection of oxide and soot, but, apart from this surface deterioration, are in good condition. On these same buildings, four ornamental cast aluminium plaques, which were enamelled in colours, although never cleaned, have withstood the weather as well as the 10-ton cast stainless steel (24 per cent. chromium, 12 per cent. nickel) bas-relief over one of the entrances.

We have now more than fifteen years' experience of aluminium window frames in this country, and this application has been extensively developed in America. Outstanding examples of this use are to be seen in the New University Library, Cambridge, and the Bodleian Library, Oxford. Provided suitable alloys are used, and with improved methods of making welded joints, it is considered that this application will be extended. The tendency for anodised frames to deteriorate in appearance can be avoided by washing the surface with water or wiping with a wax polish. These window frames would need appreciably less maintenance than similar steel components. The use of specially designed extruded sections and of hollow sections give considerable scope to the designer for achieving economies in material and installation costs, as well as for achieving a pleasing architectural appearance. Similar remarks apply to aluminium roof glazing which has proved satisfactory under severe conditions of service.

Wide use is now being made of aluminium rainwater goods, which, on account of their ease of installation, low breakage losses and satisfactory service to date, are proving a satisfactory alternative to the traditional cast-iron components. Gutters, down-pipes and fittings, cast or extruded, are made to standard designs, dimensions and materials as specified in B.S. 1430: 1947 ([13]), and draft specifications covering rainwater goods made from sheet aluminium alloy are also being prepared. At present most of these rainwater goods are being made in secondary aluminium alloys which are not of the most corrosion-resistant type,

and painting is strongly recommended for industrial and coastal areas.

Because of the urgent need to economise in the use of lead in building, aluminium or suitable aluminium alloys have been included among the suitable materials for such items as main roof coverings (in alloys to B.S.STA.7-A1, A2, AW4C, AW15G), valley gutters (in alloys to B.S.STA.7-AC2, AC6, AW4, AW9, AW10), flashings and soakers (in alloys to B.S.STA.7-A1, A2, A3 and A4D or AW3C) and for patent glazing (in alloys to B.S.STA.7-AW3A, AW5A, AW9A, AW10A) in addition to rainwater goods.

The thermal insulation of buildings has been given considerable attention[14], and for this purpose aluminium foil, or foil-covered paper, has been used to a limited extent in house construction as a lining in wall cavities, under floors and to roofs. With a low emissivity value of about 0.05 compared with a value of about 0.9 for common building materials, bright clean foil in conjunction with an air space can be used for building a wall with a low thermal transmittance. Special care is necessary in fixing this foil to maintain the air spaces and to avoid accumulation of dust, which would appreciably increase the emissivity value of the foil.

Aluminium scaffolding is now a familiar feature of building work in progress in London and other towns, although it is only about five years ago that this application was seriously considered. The advantages of using aluminium alloy instead of steel scaffold tubes are already recognised. Because of the lightness of the aluminium tubes, erection time and ease of transport, costs may be reduced by as much as 50 per cent. Freedom from rusting makes them cleaner to handle and a longer service life can be expected. These advantages, together with a higher scrap value, offset their initial higher cost. Alloys such as those covered by specification B.S.STA.7. AW10C. have been used and load tests made on scaffolding in this alloy have proved their suitability for all conditions of service, even when using tubing of the same dimensions as the conventional steel tube [15].

Cast aluminium moulds have also been used extensively for making precast concrete blocks used in building construction and if suitable dressings are given to the mould, a good mould life is obtained without undue surface attack from the wet concrete.

Aluminium is now used in the form of sprayed coatings to protect iron and steel and even aluminium alloy structural components. Investigations to date indicate that for coatings of equal thickness, aluminium is equal to zinc as a protective coating and is probably superior under conditions of high humidity and pollutions [16]. As a constituent of paint, aluminium has, of course, been used for many years, particularly as a finishing coat.

Plumbing Applications.

Experience with aluminium alloy water service-pipe installations in France and the U.S.A. have confirmed the results of laboratory tests made in this country which showed that these installations are prone to a severe form of localised or "pitting" corrosion attack which rapidly perforates pipes used for hot and cold water services. This type of failure does not always occur and the performance of these installations has varied according to the district and nature of the water supply. A careful study of this problem has been made in France but, as the report by M. Lafuma [17] has shown, it is not yet possible to account fully for the causes of this severe form of attack.

It is therefore not advisable to use aluminium for water service pipes. On the other hand, gas-pipe installations have given satisfactory service and aluminium radiators or convection heaters, when used in conjunction with iron or steel pipe, have also given satisfactory service. In the latter case a deposition of iron oxide or rust is usually found on the inside surface of the aluminium heater which appears to protect the aluminium from localised corrosion attack.

The possibilities of using soil pipes in aluminium alloys are being investigated, special attention being given to the development of suitable joints which must be gas-tight as well as corrosion-resistant. Cast-aluminium water cisterns are also worthy of consideration but it would be advisable here to avoid copper fittings or copper pipes in the same circuit, which may give rise to electro-chemical corrosion unless suitable protective coatings, such as a bituminous coating, is given to the inside of the cistern.

Another application of aluminium is in the manufacture of flexible or pliable tubing, especially suitable for electrical wire conduiting. Aluminium and bituminous impregnated strip are fed into a specially designed machine which forms and ejects the tube continuously. Because of the pliability of this type of tubing there is an appreciable reduction in the time for installation.

During the last two years many local authorities have fitted aluminium sinks and drainers in their houses and recent surveys of their performance indicate that these components have given satisfactory service under normal household and canteen kitchen conditions. These components have been made as die-castings in aluminium-silicon types of alloy or fabricated from aluminium alloy sheet. Reports on their service performance have been published [18 19] and the results of surveys made in many parts of the country would indicate that, in cases where the sinks and drainers were cleaned regularly, their performance under severe service conditions was satisfactory, and actually their surface appearance improved with good use. While it is harder to keep these components clean by comparison with stainless steel or glazed earthenware sinks, this disadvantage is offset to a certain extent by having the sink and drainer in one unit, thus avoiding the leakages which occur between a separate sink and drainer.

There is little evidence to date that severe staining is caused by fruit juices and that the use of ordinary alkaline washing solutions are harmful, while no troubles have been experienced at the outlet joints where precautions are taken, by using fibre washers as insulators, to avoid electrolytic attack.

Conclusions.

An endeavour has been made in this brief survey to indicate the most salient features in the present-day use of aluminium in buildings. Shortages of other building materials have, in post-war years, provided many opportunities for new applications but it is noteworthy that the use of aluminium has been carefully restricted to those fields where its use could be justified on technical grounds. The additional data concerning performance which will become available as a result of these new uses of aluminium will be very valuable when considering the suitability of these materials for more ambitious schemes in the future.

While there is a steady increase in the use of aluminium, mostly in sheet form, the structural use of aluminium, except in the case of the aluminium house, has not been extensive and has usually been confined to special projects. This is not very surprising in view of the lack of design data for large frame and roof structures and the high price of aluminium structural members, which is about twice that of steel. There are, however, indications that this structural material will be more widely used in the future, particularly where prefabricated or unit construction is contemplated for such buildings as schools or factories. For special buildings such as exhibition buildings, where ease of transport and rapid erection time are essential, the advantages of aluminium are already recognised.

In other fields, such as naval architecture and bridge construction there is an increasing use of aluminium. New projects such as the twin-leaf trunnion bascule bridge to be constructed in aluminium alloy over the river Wear at Sunderland will, no doubt, be followed closely by all interested in the application of aluminium.

Meanwhile, metallurgical research will continue to have an important influence on future developments, and recent advances—such as improved methods of welding and brazing aluminium, the development of high-strength alloys with good corrosion resistance and capable of being welded, together with improved protective coatings—will eventually result in a still wider application of aluminium base materials. The relative price of aluminium in relation to other building materials will, however, remain the primary factor governing its use. Any new process for the more economical extraction of aluminium from its ores or possibly aluminium-bearing clays, resulting in a still further reduction in the price of aluminium, would be of major importance in determining the extent of its future application.

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TOWN AND COUNTRY PLANNING ACT, 1947

By NORMAN P. GREIG, B.A., Barrister-at-Law, F.R.San.I., F.I.Arb., etc.

12.—SUPPLEMENTAL PROVISIONS (Continued)

SPECIAL PROVISIONS AS TO LONDON.—Section 14 is long and complicated, but the following is a summary of the chief points involved:—

1. The London County Council is the local planning authority for the administrative County of London, but certain important functions *may* or *must* be delegated to the Common Council of the City of London, or to the metropolitan borough councils, as the case may be.

2. In regard to *development plans*, the L.C.C. *must* consult with the Common Council or with the metropolitan borough council whose concern it is, before submission to the Minister. The same rule applies to *alterations* or *additions* to a plan.

3. In regard to *control of development*, the L.C.C. *may* (i.e., can) delegate to the Common Council any functions under regulations, in regard to control of advertisements (Section 31); but they *must* delegate to the Common Council functions relating to *planning permission* (Articles 1 and 2) as prescribed by regulations. In the case of applications for planning permission not provided for by regulations, before making a determination, the L.C.C. must consult the Common Council, and the procedure is similar in the case of *tree preservation orders* (Article 3). The L.C.C. can delegate to metropolitan borough councils any functions under regulations regarding *advertisements*, and must do so, where applications for planning permission raise matters of principle, and are so described by the development Order, and similarly with tree preservation Orders.

4. As to *building preservation Orders* (Article 3), the L.C.C., the Common Council and the metropolitan borough councils are authorities for the purpose, but the L.C.C. must consult either of these concerned before making such Orders.

5. In regard to *agreements regulating the development or use of land* (Section 25, Article 2), the authorities are the L.C.C., the Common Council, and, with the County Council's consent, the metropolitan borough councils.

6. *Compulsory acquisition of land* (Article 4). The L.C.C. and the Common Council (in the City) are the authorities, but, with the consent of the L.C.C., a metropolitan borough council can be authorised by the Minister to acquire land compulsorily. A metropolitan borough council is authorised to acquire land compulsorily for *a public open space* after first consulting with the L.C.C.

7. In regard to *acquisition of land by agreement*, Section 40 (Article 4) gives power to the L.C.C., with the Minister's consent, to acquire by agreement any land to which Section 38 could be applied. The present Section (114) gives a similar power to metropolitan borough councils.

8. As to *purchase notices* (Article 2), the L.C.C. and the Common Council are the authorities, though the Section gives power to the Minister, who will take into consideration the probable ultimate use of the land, to authorise other authorities (e.g., a metropolitan borough council) to acquire the land.

9. The acquisition of *buildings which are the subject of building preservation Orders* (Article 3), by agreement or compulsorily (Section 41) by county councils, is put within the power of the Common Council or the metropolitan borough council (as the case may be) by the present Section.

10. Section 48 (Article 4) dealt with (*inter alia*) the declaration of land forming a private street. The present Section makes the Common Council and the metropolitan borough councils appropriate authorities for this purpose.

[*Note.* On July 1, 1948, the Town and Country Planning Delegation (London) Regulations, 1948, made by the Minister under Section 114, came into operation, and provide that the L.C.C. shall delegate to the Common Council their functions in relation to applications for planning permission in respect of land in the City of London under Sections 14, 16, 17, 18, 23 and 24, of the Act. The Regulations, among other matters, provide that, before dealing with any application for permission, the Common Council must obtain the agreement of the L.C.C. to the *manner* in which they propose to deal with it, and any application which, in the opinion of the said Council, is of exceptional difficulty must be referred to the Minister in accordance with the Town and Country Planning (City of London Applications) Direction, 1948 (S.I. 1948, No. 1460). This Direction was made by the Minister under Section 15 of the Act at the same time as the above-mentioned Regulations.]

LAND REGULATED BY SPECIAL ENACTMENTS

Section 118 provides for the case of development of land which has been or can be authorised by other Acts (including local Acts). If such an Act was in force on August 6, 1947 (the time of the passing of the present Act) then, in general, application for planning permission must still be made under the present Act.

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MEANING OF TERMS IN THE ACT

Many of the terms mentioned in Section 119 have been defined in the sections of the Act dealing with them, but others should be noted, viz:

BUILDING includes any structure or erection and any part of it, but does not include plant or machinery in it.

BUILDINGS OR WORKS include waste materials, refuse and other matters deposited on land.

BUILDING OPERATIONS include rebuilding operations, structural alteration of, or additions to, buildings and other operations normally undertaken by a person carrying on business as a builder.

CLEARING, in relation to land, means the removal of buildings or materials, levelling the surface, and the carrying out of any other operations in relation thereto as may be described by regulations under the Act.

FUEL OR FIELD GARDEN ALLOTMENT. This expression (among others) was used in the Acquisition of Land (Authorisation Procedure) Act, 1946. It is an archaic term and in the Inclosure Act, 1845, Section 34 was applied to land set aside "for allotments or field gardens" for the labouring poor, and "*for a supply of fuel for the poor or other inhabitants.*" Such would now vest in parish councils or district councils.

ENGINEERING OPERATIONS include the formation and laying out of access to highways.

ERECTION in relation to buildings includes extension, alteration and re-erection.

INDUSTRIAL BUILDINGS are buildings used or designed or suitable for use for the carrying out of any industrial process (Distribution of Industry Act, 1945, S.15).

LAND includes a building as defined above; and in relation to the acquisition of land under Part IV of the Act includes any interest or right in or over land.

"MINISTER" includes the Treasury, the Admiralty, the Board of Trade or any other Government department.

"THE MINISTER" (by Section 1) is the Minister of Town and Country Planning.

"RELOCATION OF POPULATION OR INDUSTRY" means in relation to an area of extensive war damage or an area of bad layout or obsolete development, the rendering available elsewhere, either in an existing community or a community to be newly established (e.g. a "new town"), of accommodation for business or other activities together with public services, facilities for public worship, recreation and amenity, etc.

"USE," in relation to land, does not include the use of land by the carrying out of any building or other operations thereon.

The above definitions are contained in Section 119 of the Act; the expressions following are explained either in the Act itself or the Schedules thereto.

JOINT PLANNING BODIES can be established by the Minister, when thought expedient, after consultation with the local authorities concerned, and consists of representatives of local planning authorities.

JOINT PLANNING BOARDS (Section 4) are constituted by an order of the Minister for the areas of two or more councils. A local inquiry must be held first, unless the councils consent. The First Schedule provides for the com-

position and appointment of joint planning boards and joint advisory committees.

JOINT ADVISORY COMMITTEES may, under Part III, be set up for the purpose of advising local planning authorities on the planning of their areas. Any two or more of these authorities can, with the Minister's approval, concur in the setting up of a J.A.C.; or the Minister himself can, by Order, provide for their establishment. It is particularly as members of such advisory bodies that the services of architects and surveyors will prove of the greatest possible value in the carrying out of the purposes of the Act.

(To be continued.)

LAW AND THE BUILDER

SUPPLEMENTARY LICENCES AND EXCESS COSTS

By James S. Clarke, Barrister-at-Law.

IT did seem that the Ministry of Works, in empowering licensing officers to amend the sum shown on a building licence where the sum authorised by it had been exceeded for unforeseen reasons, had provided the builder with some relief from the effects of the decision in *Bostel Bros. Ltd.* v. *Hurlock* (1948 2AER 312); but in *Jackson, Stansfield and Sons* v. *Butterworth* (1948 2AER 558) the Court of Appeal has again made it clear that to proceed with work in excess of the cost specified on a licence is fatal to any claim in respect of such excess cost.

On May 10, 1946, a licence for "repairs to garages" at a "total cost not exceeding £35" was issued to building owners "per" a certain firm of builders. The work was begun towards the end of June and it soon became clear that the total cost was going to exceed £35. Thereupon the builders went to the borough surveyor who had issued the original licence, and were told that "if the work did not exceed £100 they might carry it out." They did so at a final cost of £69 18s. 2d., the work being finished by July 11, 1946.

Some nine months later, on April 25, 1947, the builders obtained from the same surveyor a further written licence, marked "supplementary to" the original licence, for £34 18s. 2d. to cover the unlicensed balance in respect of work done over the £35 originally allowed.

In an action by the builders to recover the cost of the work done, the defendant claimed that they were debarred from recovering the cost in excess of £35 as there was no valid licence in respect of such excess and that the work was therefore illegal.

The County Court Judge allowed the builders' claim for the full amount and the defendant appealed against his order.

On the question of the effect of the oral permission given to the builders to carry out work up to £100 in value, the Court of Appeal had the assistance of the Attorney General, who submitted that Regulation 56A did not require a building licence to be in writing, and accordingly that an oral licence was sufficient to prevent work in respect of which it was given from being unlawful under the regulation.

He did, however, point out that, as a matter of administrative practice, writing was normally used and that the administrative instructions issued by the Minister were framed on the footing that licences were as a general rule to be in writing.

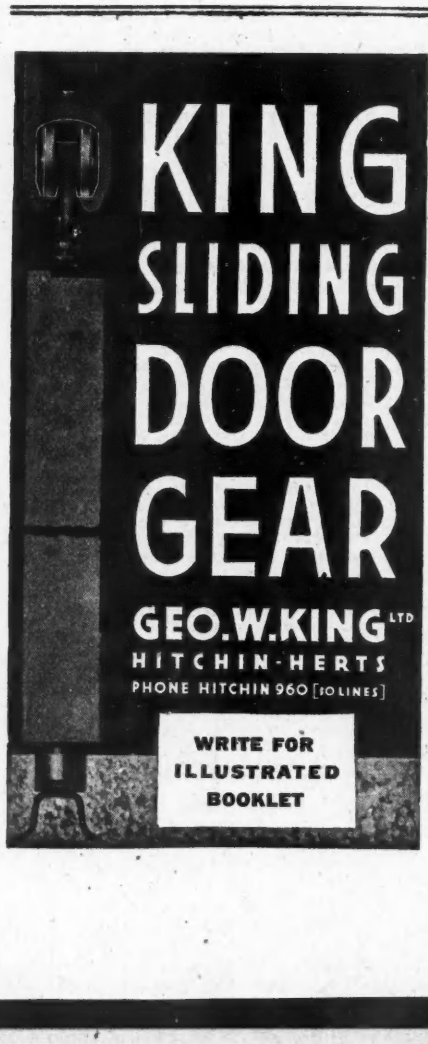
One of the Appeal Judges, Jenkins, J., accepted this submission and was of the opinion that in the circumstances of the case there had been no breach of the regulation, and that the defence of illegality accordingly failed.

But Scott and Asquith, L.JJ., took the contrary view. They held that in view of the fact that persons contravening Reg. 56A were liable to prosecution and that the effective enforcement of the licensing system could not be achieved except by means of written licences, the licence contemplated by Reg. 56A (2) must be a written document and accordingly that the oral permission given to the builders did not amount to a licence within the meaning of the Regulation.

On the question of the written "supplementary" licence of April 25, 1947, the Court was unanimous in holding that it was of no effect because the wording of Reg. 56A (2) prevented a licence having any retrospective effect. In the words of Scott, L.J., "the Regulation makes the doing of the work unlawful 'except in so far as there is in force' the necessary licence, and that it obviously means 'then there is.' The licence must precede the work."

Although this decision dealt with the question of a "supplementary" licence, their Lordships' interpretation of the Regulation renders ineffective the power of licensing officers to amend licences to cover increased costs unless such amendments precede the carrying out of the work in respect of which such costs are incurred.

Where, therefore, it appears that the amount specified on a licence is likely to be exceeded, application must be made to the licensing officer to amend before proceeding with work beyond the permitted cost.



FLOOR FINISHES

These two slim volumes* are the first of a new "Architectural Series" edited by Mr. Anthony Chitty, and are very different in character. Miss Whiting's little book deals competently and concisely with the selection of alternative floor finishes, which are considered from a functional point of view under the successive heads of appearance, cleanliness, hard wear, warmth, quietness, effect of damp, oils, acids, alkalis, and heat and cost. This method involves a good deal of repetition, because each material appears separately under each of the seven heads mentioned, and the processes of laying and cleaning may be treated under any one of the heads. Apart from this redundancy, due to a questionable form of arrangement, the book contains much valuable and up-to-date information which is not available in most text-books. The author mentions "jaspé" colours, a term not yet included in the Shorter Oxford Dictionary's "Addenda" up to 1944.

Mr. Harrison's book is an original and thoughtful study of the application of standardisation to building and, indeed, to architecture. He discusses gains as well as losses entailed in the process. Beginning with definitions of standards and standardisation, he quotes a summary of the chief categories under which standards can be framed, and the levels (industrial, national, international) at which standardisation can take place. He demonstrates quite convincingly that, in building, at any rate, the standardisation of separate materials, units and items must be accompanied by "integration and dimensional co-ordination" to be effective, as the recent demand for completely prefabricated houses has proved. One of the most interesting parts of the book deals with steps taken in various countries towards establishing a modular unit. He shows that we in England have not yet even related our newly standardised kitchen-fittings to the doors and windows of the kitchen, or those of doors and windows to standard brick sizes. Comparing the metric system with our own archaic measures and with the "4-in. cubic module" adopted by the U.S.A. in 1941 for co-ordination of sizes in building, he concludes that in spite of all the obvious difficulties to be surmounted, the U.S.A. and U.K. should adopt metrical units for the sake of international convenience; and suggests that agreement might be arranged under the ægis of UNESCO. Finally, he explains when and where standardisation should not be indiscriminately applied: that is, in the field best described as "architectural design." Here he is wise as well as emphatic, and his illustration of a standard lamp-post will enable most of his readers to agree with him that it produces "an all-time low." After a furious attack upon the standardised telephone kiosk (which was surely designed by a rather eminent person), he observes that there is a real risk that "cultural protection" of our æsthetic sense may be enforced if such precedents are accepted. This sensible book is marred only by the page of unworthy pictures facing page 8 and by the cheap facetiousness of their captions.

M. S. B.

*FLOOR FINISHES: A GUIDE TO THEIR SELECTION. By Penelope Whiting. 7s. 6d. net. AN INTRODUCTION TO STANDARDS IN BUILDING. By D. Dex Harrison. 8s. 6d. net. (London: E. and F. N. Spon, Ltd.)

PUBLIC LIGHTING

AESTHETIC AND SAFETY VALUES

THE best architectural features of a street were often brought out more clearly by good street lighting than by daylight, said MR. N. BOYDELL, M.I.E.E., A.M.I.Mech.E., when giving his presidential address at the recent annual conference of the Association of Public Lighting Engineers at Eastbourne. Good lighting, he said, was often the reason for, and an indication of, civic pride. After reviewing the main aspects of public illumination which had concerned the Association in the past he went on to discuss the lack of uniformity in lighting. Following is a summary of his remarks:

Too often, even when there is plenty of money available, street lighting is treated as the Cinderella of the services. The fundamental trouble with bad lighting is that the statutory position is such that the provision of lighting is still, to all intents and purposes, optional by local authorities, large and small; and there are so many lighting authorities who, because of their limited size, have not had and never will have, under the present arrangements, sufficient money to provide lighting up to the standard needed to-day. The Ministry of Transport takes a considerable interest in the construction of a road and the economics thereof and so, surely, the provision and maintenance of the lighting of that road should be considered a part of the whole. In effect, adequate street lighting can be provided at a cost very much less than the cost of accidents it is calculated to save.

The enlightened authority primarily looks upon its good lighting as being for the convenience and safety of road users, and also for the prevention of crime, yet there are other reasons for lighting a town well. It is my view that new residents and visitors are attracted to a town where street lighting is of a high standard. The industrial revolution left hundreds of towns in the industrial areas of the country with hardly a redeeming feature æsthetically. Streets which were lighted for years in a most dismal manner are lighted exceedingly well and, by day, the well-designed columns enhance the appearance of a street. We have still a long way to go in this country, however, with regard to appreciation of the daylight appearance of installations, although the importance of this is now realised and the Royal Fine Art Commission is actively interested. In Paris, on the Pont du Carrousél, there are columns which, by daylight, are only 14 metres high, so as not to spoil the æsthetic views in the neighbourhood, but by automatic means at dusk the columns are extended, telescopic fashion, until they are 21 metres high, to provide appropriate light distribution. Ideas like this could well be applied in this country.

There is a real need for maximum co-operation in several ways between lighting engineers and town planners and others responsible for the planning, construction and maintenance of our roads. One example of this need is the growing interference with good lighting by trees planted along the highway.

A fundamental reason for maximum co-operation between the road engineer and the lighting engineer is the question of road surfaces. There is need for road surfaces to be, for the most part, of light matt colour to provide effective reflection and diffusion of light. It is obvious that there is not enough consideration given to the type of road surface needed to meet the requirements of both parties, and closer co-operation might produce the desired result.

What of the future? The technique of street lighting will continue to advance from its present high standard in this country which, despite the administrative difficulties, is second to none. The latest technique in the application of fluorescent lamps to street lighting is bound to expand generally, and authorities will probably follow the fine example set by the new installation in the town of Rugby, in regard to which an American lighting specialist recently said that they have nothing to compare in the United States. Will even this technique, however, be superseded eventually by one in which the roads and pavements are lighted from strips and panels set in the façades of buildings? The future holds infinite possibilities of this kind. Centralised remote control is an obvious step, in due course, in order to provide simultaneous switching and flexibility of operation.

NEWS IN BRIEF

F.B.I. Deputy-President Appointed.

At a recent meeting of the grand council of the Federation of British Industries, Sir Robert Sinclair, K.C.B., K.B.E., was appointed deputy president of the Federation.

New T.D.A. Appointment.

Mr. Phillip O. Reece, A.M.Inst.C.E., who joined the Timber Development Association as Constructional Research Director in 1946, has now been appointed Director of the Association.

Purchase Tax.

The Commissioners of Customs announce that clothes and similar boilers of a kind used for domestic purposes which do not incorporate, or provide for the incorporation of, heating elements, are not within the scope of the exemption under Group 12 (f) but are chargeable under Group II (a) at the rate of 33⅓ per cent. of the wholesale value. Notice 78L, at pages 9 and 10, should be noted accordingly.

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M-W.51

Gift for Aged Clergy.

A firm of plumbers' and builders' merchants in Birmingham is among those who have sent donations to the Rev. W. H. Elliott at 53, Tufton-street, Westminster, S.W.1, in response to his recent broadcast appeal on behalf of homes for aged clergy.

Builders at Golf.

The match played at Sandy Lodge between the London Master Builders G.S. and the Eastern Federation G.S. resulted in a win for the latter with a total of 14½ matches to 12½. In the singles L.M.B.A.G.S. won 9½ matches and E.F.G.S. 8½. In the foursomes E.F.G.S. won 6 matches and the L.M.B.A.G.S. 3. The Autumn meeting of the London Master Builders' Association G.S. will be held at Stoke Poges on Wednesday, September 29.

Reorganisation of Company.

Following the recent organisation of De La Rue Gas Development, Ltd., the directors state that the company will continue to proceed with the development and manufacture of all its products including De La Rue Multipoint Gas Water Heaters, infra-red drying equipment, Perfecta gas thermostats, gas cookers and gas grillers. Mr. Leopold Friedman has ceased to be a director of this company and of Thos. Potterton (Heating Engineers), Ltd., but will retain his seat on the board of Thomas De La Rue and Co. Ltd.

Ontario's Development Plans.

Part of the Ontario Government scheme to develop industry, and induce United Kingdom firms to set up branches in the Province, is an over-all 600 million dollar hydro-electric development programme. In this connection successful negotiations have been taking place between the Governments of Ontario and the State of New York for the establishment of a 300 million dollar hydro-electric scheme for the St. Lawrence River. This project, which will be the greatest development of electric energy ever undertaken in Canada, has been under consideration for a number of years, and has now reached the stage where Ontario Province and New York State have filed identical plans to their respective central Governments in Ottawa and Washington.

A Series of Management Abstracts.

The first of a monthly series of management extracts, intended as a digest of material published in any part of the world, of interest to those who wish to keep themselves informed of current developments in management science, has been published by the British Institute of Management, 17, Hill-street, W.1, at 3s. each (annual subscription, 30s.). The subject headings that will appear in any one month are a selection from standard headings and can be varied from month to month according to available material. Of particular topical interest in the current edition are Abstracts 2-9, which deal with problems of organisation, maintaining authority in the face of specialisation, multiple management, and the pros and cons of factory sizes. Also included are the results of a survey in 1948 in the U.S.A. analysing productivity. Abstracts 18-21 deal with the problems of the small firm, the use of selection boards within a firm, how to keep staff informed, and the need for explaining the significance of their work to employees. The Financial Management sections, abstracts 26 and 28 (pages 21 and 23) deal with budgetary control, and standard costing and accounts of nationalised undertakings.

TRADE NEWS

Change of Address.

Messrs. Waygood Peerless, Ltd., manufacturers of brushes and paints, have moved their offices to Terminal House, Purley-way, Croydon, Surrey.

Catalogues Received.

"Gas List, Tubes and Fittings, Standard Price List": Wellington Tube Works, Ltd., Great Bridge, Tipton, Staffs.

"Hope's Hot-Dip Galvanized Casements." No. 244. Henry Hope and Sons, Ltd., Smethwick, Birmingham, 40.

New Plasterboard Works, South Wales.

A new Gypsum Hardwall Plaster Mill with an initial productive capacity in excess of 40,000 tons per annum has recently been completed for Unirok, Ltd., on a seven acre site at Crown Wharf, Port Talbot, Glamorganshire, and will be producing a full range of high-grade plasters for building and industrial purposes.

Two Exhibitions.

Messrs. Sadcolok Limited, Delta House, 220-222, Balham High-road, S.W.12, propose to hold two exhibitions of their "Sadcolok" and "Nerkorode" products in Dublin and Glasgow as follows:—At Dawson Hall, 41-42, Dawson-street, Dublin, from Monday, September 27, to Friday, October 1, inclusive; at 29, Wellington-street, Glasgow, from October 11 to October 16, inclusive.

Self-Propelled Mobile Crane.

In order to meet the demand for more flexible handling in heavy industry, Steels Engineering Products, Ltd., Crown Works, Sunderland, have produced a 12½ ton Coles mobile crane, model 90028. This crane is the result of over 65 years experience of engineering and mobile crane construction and represents a new advance in heavy mobile crane technique. It is available for petrol, electric or diesel-electric operation and incorporates the latest Coles features and safety devices.

Plastic Flooring.

The decision of the Limmer and Trinidad Lake Asphalte Co. Ltd., to set up a special tile department in order to bring plastic decorative tiles to the notice of the public arose out of the success of their trials with imported similar American tiles over ten years ago.

Development in this field was halted by the war, but the company are now taking advantage of the availability of the tile in this country and including its application among the better known grades of flooring in which they specialise.

Perspex Canopy for Tractors.

Mackay Industrial Equipment announce the production of the new "Dormer Dome" Perspex Canopy (provisional patent granted) for Allis-Chalmers Industrial Tractors. Plans are now in preparation for the production of the "Dormer Dome" for all types of earth-moving plant and machinery. This transparent canopy, made from ¼ in. Perspex, is designed to give clear vision and to provide protection to the operator from inclement weather, flying debris, sand, dust, and similar airborne elements. It is intended to give the protection and cover required by the Building (Safety Health and Welfare) Regulations, 1948, which come into operation on October 1.

CODE OF PRACTICE

PIPE DUCTS

THE Codes of Practice Committee has issued for comment Code 304.105, "Design and Construction of Pipe Ducts," which was prepared by a committee convened by the Institution of Municipal Engineers. This deals with the design and construction of ducts, chases, casings and subways for the accommodation of pipes and cables servicing a building.

A full list of definitions of terms used in the Code is provided. Attention is drawn to the necessity for consultation at an early stage between the architect, engineer and others responsible for the various services. There is also a comprehensive list of British Standards which covers all the materials likely to be used in the construction of pipe ducts.

Advice is given on the position and arrangement of pipes and protection from vermin and frost. There are also recommendations on the construction and waterproofing of subways and trenches and on the suppression of noise in pipes.

The appendices of the Code include tables which give sizes of the chases required to accommodate various sizes of pipes. Further tables show the relation of various services to each other.

The Code is completed by a series of drawings showing typical methods of accommodating pipes and cables, ranging from the small wall chase to large trenches and subways which may carry a dozen or more services. The Code is subject, before final publication, to amendment in the light of comments which should be received by October 23. Copies may be obtained from the British Standards Institution, 24-28, Victoria-street, S.W.1, price 3s., proof reference CP (B) 780.

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THE SCOTTISH BUILDER

NEW BUILDINGS

Baillieston.—New garage and other additions proposed, for which the architect is A. Stewart, 2, Beech-gdns., Baillieston.

Cambuslang.—New workshops and storage buildings, etc., proposed, for which the architect is W. Watt, Albert-st., Motherwell.

Edinburgh.—Negotiations proceeding for sanction to rebuilding after fire of Theatre Royal, for Edinburgh Varieties, Ltd., 115, Renfield-st., Glasgow. Architects, Bowhill, Gibson & Laing, 19, Manor-pl., Edinburgh.

Glasgow.—J. Irving & Sons, Ltd., 82, Victoria-rd., Glasgow, are to erect new building at Bognoir-st.

Motherwell.—Clyde Valley Alloy Co., Ltd., to carry out additions and alterations at works at Craigneath.

Thornliebank.—G. & J. Weir, Ltd., engineering works, Cathcart, are to erect pattern workshops.

Wishaw.—Ice cream factory proposed, for which the architect is J. Ross, 80, Main-st., Wishaw.

Land Ripe for Development.

UNDER the Town and Country Planning (Scotland) Act, 1947, anyone wishing to erect, extend or alter buildings may be required to pay a development charge to the Central Land Board. There are, however, certain cases where building operations are exempt from that payment. One of these exceptions is where the land was "ripe for development" before July 1, 1948, and is certified as such by the Secretary of State. A leaflet on this subject has been prepared by the Department of Health for Scotland and may be obtained free of charge from local authorities.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

SEPTEMBER 23.

†***East Sussex Standing Joint Committee.**—4 police houses at East Grinstead. E. A. Verger (F.), County A., County Hall, Lewes.

SEPTEMBER 27.

†***Gateshead C.B.**—Conversion of Windy Nook Isolation Hospital, Felling-on-Tyne, into Student Nurses' Preliminary Training School. H. J. Cook (A.), Chief Architect, Swinburne-st. Dep. £5 5s. Tenders by October 12.

†***Gateshead C.B.**—183 houses and 36 flats in 5 contracts at Lyndhurst estate. Chief Architect, Municipal Offices, Swinburne-st. Dep. £5 5s.

OCTOBER 1.

†***Beaminster R.D.C.**—32 houses at various sites. C., Town Offices, Beaminster. Dep. £2 2s.

†***Cheshunt U.D.C.**—20 old people's dwellings at Bury Green estate. Clifford Tee & Gale, Moorgate Hall, 153, Moorgate, E.C.2. Dep. £2 2s.

OCTOBER 2.

†***Denbighshire E.C.**—Extensions at Denbighshire Technical College, Wrexham. Gilbert D. Wiles, County A., Grove Park, Wrexham. Dep. £5. Tenders by October 18.

†***Harpenden U.D.C.**—19 houses, Batford estate. F. A. Harris, C. Dep. £1 1s.

OCTOBER 4.

Aylesbury R.D.C.—8 houses at Grendon Underwood with site works, etc. R. C. White-Ceely House, Church-st. Dep. £3 3s.

Brighton T.C.—44 houses in two contracts at Hollingbury estate. E. & S., 26-30, King's-rd. Dep. £2 2s.

†**Cumberland C.C.**—Second instalment of Secondary School at Wigton. County A., 15, Portland-sq., Carlisle.

Golborne U.D.C.—10 houses at Hawthorne-ave. estate, Glazebury. F. Martland, C., Council Offices, Lowton, nr. Warrington. Dep. £2 2s.

Hemsworth U.D.C.—10 pairs of houses at Barnsley-rd., Highfield estate. Pennington, Hustler & Taylor, Ropergate, Pontefract. Dep. Dep. £2 2s.

Ince-in-Makerfield U.D.C.—40 dwellings at Petticoat-la. E. & S. Town Hall. Dep. £2 2s.
Morpeth T.C.—14 houses. B.S. Dep. £2 2s.
Royton U.D.C.—24 houses at Heyside site. E. & S., Cardigan-st. Dep. £2 2s.
†***Somerset C.C.**—Erection (first phase construction) of new junior school, Bath-rd., Bridgwater. R. O. Harris (F.), County A., Park-st., Taunton. Dep. £2 2s.
***Spalding R.D.C.**—88 houses at various sites. F. B. Saunders, A.I.A.A., 10, The Crescent, Spalding, Lincs. Dep. £2 2s.
Wembley T.C.—30 houses at 'Fryent estate, Kingsbury (contract 3). Boro Treas., Town Hall. Dep. £2 2s.
Wembley T.C.—60 flats at Forty-ave. Boro' Treas. Dep. £2 2s.

OCTOBER 5.

Barmouth U.D.C.—4 flats at Marine-rd. S., Council Offices. Dep. £2 2s.
Brighton C.B.—4 shops with flats over at Carden-av., Patcham, and 9 shops with flats over at Moulsecomb-way, Moulsecomb. D. J. Howe, M.I.C.E., M.Inst.Mun.E., 26-30, King's-rd. Dep. £1 1s. each scheme.
Southend-on-Sea C.B.—Houses at site No. 5, Eastern-ave. Three pairs type 43C; 5 blocks of four types 11 and 12; 3 blocks of four types 45D and 45E. B.E., Municipal-bldgs. Dep. £2.

OCTOBER 6.

Camelford R.D.C.—2 houses at Saint Teach and 2 at Bossinney-rd., Tintagel. Andrew & Randell, Hepworth-chbrs., St. Austell.
Eton R.D.C.—6 pairs of aged persons' bungalows at Harefield-rd., Denham. E. & S., Council Offices, Windsor-rd., Slough. Dep. £3 3s.
Eton R.D.C.—3 pairs of houses at Uxbridge-rd. (Dawes Moor), Wexham. Sir John Brown, A. E. Henson & Partners (FF.), 117, Sloane-st., S.W.1. Dep. £3 3s.
†***Isle of Ely C.C.**—Chemical laboratory, lecture room and two classrooms with lavatories and external services at Wisbech Grammar School. R. D. Rolson (A.), County A., County Hall, March. Dep. £2 2s.
†***Isle of Ely C.C.**—Dining hall and dinner kitchen with external services at March Junior Boys' and Girls' C.P. Schools, Burrowmoor-rd. R. D. Rolson (A.), County A., County Hall, March. Dep. £2 2s.
†***Norfolk E.C.**—Conversion of playsheds to dining-room and scullery at Watton County Primary School. W. O. Bell, Chief Ed. Officer, Stracey-rd., Norwich.
†***Norfolk E.C.**—Kitchen and stores at Morley St. Botolph Voluntary Primary School. W. O. Bell, Chief Ed. Officer, Stracey-rd., Norwich.
†***Smethwick C.B.**—Workshop, garage and canteen block at gas works, Rabone-la. Gas E., Gas Offices, Rabone-la. Dep. £3 3s. Tenders by November 10.

OCTOBER 7.

Bullingdon R.D.C.—18 houses at Garsington and 8 at Warborough. Harry W. Smith (F.), 29, George-st., Oxford. Dep. £2 2s.
Burgess Hill U.D.C.—8 houses at West Park estate. E. & S., Council Offices, 32, Church-rd. Dep. £2 2s.
†**Cambridge T.C.**—New infants' and junior school, Newmarket-rd. B.S., Guildhall. Dep. £5 5s.
Dodworth U.D.C.—2 houses with incidental works at Dodworth Miners' Welfare Recreation Ground. H. Strutt, S., Council Offices. Dep. £1 1s.
†***Folkestone T.C.**—10 houses at Rossendale-rd. site, contract No. 1. B.E. Dep. £2 2s. Tenders by November 1.
†***Hampshire Police Authority.**—Police house with office at Hedge End; police house with office at Stubbington. County A., The Castle, Winchester. Dep. £1 1s.
Stourbridge T.C.—157 houses in 4 groups at Norton estate, Part 1C. B.E. & S. Dep. £3 3s.

OCTOBER 8.

†***Chipping Norton T.C.**—5 pairs of bungalows at Chipping Norton. Henry Cooper & Sons, chartered quantity surveyors, 51a, Cornmarket-st., Oxford. Dep. £2 2s.
Derby C.B.—One pair of houses at Madeley-st. T. W. East (F.), Boro' A., Council House. Dep. £2 2s.
Ripley U.D.C.—10 houses at Bullbridge estate. W. E. Clark, S., Town Hall. Dep. £2 2s.

OCTOBER 9.

Braintree R.D.C.—12 houses at Braintree-rd., Gt. Bardfield. E. & S., St. Peter's-cl., Bocking, Braintree. Dep. £2 2s.
Dorking U.D.C.—36 houses at Flint Hill estate. H. D. Jeffries, C., Council Offices. Dep. £2 2s.
Edinburgh T.C.—Work in various trades for erection of secondary school at Pilton. City A.
Fowey T.C.—4 houses at Great Pinnock. B.S.
Mablethorpe and Sutton U.D.C.—12 houses at Waterloo-rd. R. Vincent Lewis, C., Council Offices. Dep. £2 2s.

OCTOBER 11.

Bucks C.C.—New infants' school at Totteridge-la., High Wycombe, Guy R. Crouch, C., County Hall, Aylesbury. Dep. £5 5s.
Cuckfield R.D.C.—20 dwellings at Albourne. E. & S., Council Offices, Boltro-rd., Haywards Heath. Dep. £2 2s.
***Esher U.D.C.**—Reinstatement and conversion into offices of Esher Lodge. E. & S. Dep. £1 1s.
Heckmondwike U.D.C.—38 houses at Dale-la. estate. F. A. Brown, S., Oldfield-la. Dep. £2 2s.
Rhondda U.D.C.—16 houses at Pontrhondda, Llwynypia. E. & S., Council Offices, Pentre, Rhondda. Dep. £2 2s.
St. Austell U.D.C.—5 pairs of houses at Poltair. E. & S. Dep. £2 2s.
***Watford R.D.C.**—10 Airey houses with outbuildings, drainage, etc., at Battlers Green-dr., Willow-way, Radlett. C., Council Offices, Wynyard House, Langley-rd. Dep. £1 1s.

OCTOBER 12.

***Alton R.D.C.**—12 houses at Chawton. C., Council Offices, Barton End, Alton. Dep. £3 3s.
Ches. C.C.—Prefabricated hutting for additional accommodation at Cheadle Moseley Hall Grammar School. County A., The Castle, Chester. Dep. £2 2s.
Isle of Man Local Govt. Board.—14 houses with site works, etc., at Janet's Corner, Castletown. J. Philipps / Lomas, architect, Martins Bank-chbrs., Victoria-st., Douglas. Dep. £2 2s.
***Southend-on-Sea C.B.**—92 houses at site No. 7, Prince-ave. B.E. Dep. £2.

OCTOBER 13.

***Colchester T.C.**—Houses at Shrub End site. (a) 5 blocks of 2 type U.2; (b) 4 blocks of 2 type 7/8 and 2 blocks of 4 3B/5B; (c) 1 block of 4 and 2 blocks of 2 aged persons' bungalows. B.E. Dep. £2 2s. each type.

OCTOBER 14.

Dublin T.C.—70 houses at Crumlin, North area. City Treas., Exchange-bldgs., Lord Edward-st. Dep. £3 3s.
Friern Barnet U.D.C.—30 flats at Colney Hatch-la., N.10. C., Town Hall. Dep. £2 2s.
Harrow U.D.C.—56 dwellings at site fronting Weald-la. and Long Elms, Harrow Weald. E. & S., Council Offices, Uxbridge-rd., Stanmore. Dep. £2 2s.
Newcastle-on-Tyne C.C. — 156 houses in 5 groups at Section "A," Montagu housing estate. City A. Dep. £5 5s.
***Wembley T.C.**—30 flats at Fryent estate, Church-la., Kingsbury. Boro' Treas. Dep. £2 2s.

OCTOBER 16.

Kingsclere and Whitchurch R.D.C.—2 pairs of houses at Tadley and site works, etc., at site No. 24, Station-rd., Whitchurch. F. Henshaw (F.), Westminster Bank-chbrs., Andover. Dep. £2 2s.
Littlehampton U.D.C.—28 dwellings at Lyminster-rd. E. & S., Council Offices, Manor House. Dep. £2 2s.

OCTOBER 18.

***Beckenham T.C.**—Repairs to houses at Elmers-end estate (contract No. 6). B.E. & S., Town Hall. Dep. £2.
Chelmsford T.C.—36 flats with site works, etc., at Upper Bridge-rd. B.E., S. & Architect, Municipal Offices. Dep. £2 2s.
Pewsey R.D.C.—4 houses at Everleigh with sewers, etc. E. & S., Council Offices. Dep. £2 2s. (by cheque).

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OCTOBER 19.

Amble U.D.C.—2 cottages at Links estate. S. Council Offices. Dep. £2 2s.

OCTOBER 20.

Hatfield R.D.C.—16 cottages at Birchwood-ave. J. H. Parker (A.), North-pl., 82, Gt. North-rd., Hatfield. Dep. £2 2s.

OCTOBER 22.

Wellington (Salop) R.D.C.—20 houses at High Ercall and 20 at Tibberton. Walter B. Bond, F.R.I.C.S., 3, Newhall-st., Birmingham. Dep. £2 2s.
***Weymouth and Melcombe Regis T.C.**—16 houses at Westhaven estate, Abbotsbury-rd. B.E. & S., 6, Pulteney-bldgs. Dep. £2 2s.

OCTOBER 25.

***Blackwell R.D.C.**—16 houses, The Maltings site, Langwith. Architect and Housing Superintendent, "Dale Close," 100, Chesterfield-rd. South, Mansfield. Dep. £2 2s.

OCTOBER 27.

***Fareham U.D.C.**—42 houses at Mays-la., Stubbington. E. & S., Westbury Manor, Fareham. Dep. £2 2s.
***Northfleet U.D.C.**—42 houses at New House Farm estate. E. & S., Council Offices. Dep. £2 2s.

OCTOBER 29.

Dublin C.C.—58 houses at Ballyboden, Rathfarnham. Engineers' Office, 6, Parnell-sq. Dep. £10 10s.
Portland U.D.C.—16 old people's houses at Pound Piece, Weston. Crickmay & Sons, 23, St. Thomas-st., Weymouth. Dep. £2 2s.

NO DATE.

***Plymouth T.C.**—18 flats, Cannon-st. and Chapman's Ope, Devonport. E. G. Catchpole (A.), City A., Seymour-rd. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

OCTOBER 4.

Hemel Hempstead R.D.C.—Internal and external painting of council offices. E. & S., Council Offices.

OCTOBER 6.

Stourbridge T.C.—Interior decorations at various houses. B.E. & S. Dep. £2 2s.

OCTOBER 8.

***Hertford T.C.**—External painting, etc., of Public Library, Old Cross. B.S.

OCTOBER 13.

Nottingham E.C.—External cleaning and painting at 3 schools at Bilborough. Ed. Office (Surveyors' Dept.), 18, Park-row. Dep. £1 each contract.

ROADS, SEWERAGE AND WATER WORKS

SEPTEMBER 30.

†**Folkestone T.C.**—Roads and sewers at Horn-st. site. B.E. Dep. £3 3s.

OCTOBER 4.

Blaby R.D.C.—New pumping main and sewage disposal works for Narborough and Cosby. E., Council Offices, Narborough. Dep. £5 5s.
Newport (I. of W.) T.C.—Resurfacing Seaclose Quay. B.E. & S., 39, Quay-st. Dep. £2 2s.
St. Albans T.C.—Roads and sewers at Townsend-dr. site. City E. & S. Dep. £2 2s.
St. Neots U.D.C.—Compressor House, approx. 200 yds. of 6 in. dia. spun-iron pumping main, etc., re Huntingdon-rd., drainage. John Taylor & Sons, Artillery House, Artillery-row, Westminster, S.W.1. Dep. £5 (cheque only).
Twickenham T.C.—Roads and sewers at Collingwood-cl. B.E. & S. Dep. £2 2s.

OCTOBER 6.

Exeter T.C.—Reconstruction of portion of Pinhoe-rd. City E. & S. Dep. £5 5s.
Poole T.C.—Roads and sewers at Darbys-la. B.E. & S. Dep. £2 2s.

OCTOBER 8.

Eastwood U.D.C.—Roads and sewers at Church View estate (No. 2 scheme). Cecil Howitt & Partners, architects, St. Andrew's House, Mansfield-rd., Nottingham. Dep. £2 2s. (payable to U.D.C.).

OCTOBER 9.

Tettenhall U.D.C.—Roads and sewers at Woodhouse estate. E. & S., Council Offices. Dep. £3 3s.

OCTOBER 11.

Chertsey U.D.C.—Private street works at (1) Ferndale-ave. and Hillcrest-ave., and (2) at Weston-ave. E. & S. Dep. £1 1s. each contract.
Cockermouth U.D.C.—Laying of 15,500 yds. of 3 in. to 9 in. dia. mains with service connections and small reservoir and pump room. Waterhouse & Rounthwaite, MM.I.C.E., 165, Westmorland-rd., Newcastle-on-Tyne. Dep. £2 2s.
Heckmondwike U.D.C.—Roads and drainage at Dale-la. estate. E. & S. Dep. £2 2s.
Matlock U.D.C.—Construction of 12-in., 9-in. and 7-in. sewers at Bonsall Ward. W. H. Radford & Son, Albion-chbrs., King-st., Nottingham. Dep. £3 3s.

OCTOBER 12.

Guildford T.C.—Roads and sewers at Upfolds estate. B.E. & S. Dep. £2 2s.

Market Bosworth R.D.C.—1,650 yds. of sewer from 6 in. to 12 in. dia. and construction of sewage disposal works at Higham-on-the-Hill. Pick, Everard, Keay and Gimson, 6, Millstone-la., Leicester. Dep. £2 2s.

OCTOBER 13.

Wakefield T.C.—Roads and sewers at Eastmoor estate, Extension 2. City E. Dep. £2.

***Wycombe R.D.C.**—Sewerage and sewage disposal works at Hazlemere site. Architect and S., 28, High-st., High Wycombe. Dep. £3 3s.

OCTOBER 22.

Wellington (Salop) R.D.C.—Sewerage and sewage disposal at High Ercall. A. H. S. Waters, M.I.C.E., 25, Temple-row, Birmingham, 2. Dep. £3 3s.

OCTOBER 25.

Chesterton R.D.C.—Sewerage works at Great Shelford. Willcox, Kaikes and Marshall, 33, Gt. Charles-st., Birmingham 3. Dep. £10 10s.

Oundle and Thrapston R.D.C.—Water supply to northern area. Pick, Everard, Keay and Gimson, 6, Millstone-la., Leicester. Dep. £2 2s.

Oundle and Thrapston R.D.C.—Sewers and sewage disposal works at King's Cliffe. Pick, Everard, Keay and Gimson, 6, Millstone-la., Leicester. Dep. £2 2s.

OCTOBER 29.

Lleyn R.D.C.—Sewerage and sewage disposal works at Llithpaen. Richards & Dumbleton, Cornwall-bldgs., 45, Newhall-st., Birmingham, 3. Dep. £5 5s.

Lleyn R.D.C.—Sewerage and sewage disposal works at Efail Newydd. Richards & Dumbleton, Cornwall-bldgs., 45, Newhall-st., Birmingham, 3. Dep. £5 5s.

OCTOBER 30.

***Hartley Wintney R.D.C.**—Site preparation works at Sandy-la. E. & S., Council Offices. Dep. £3 3s.

NOVEMBER 1.

Gloucester T.C.—Construction of reservoir at Leathern Bottle. City S. & Water E. Dep. £2 2s.

Guildford T.C.—260 lin. yds. of 9-in. soil sewer at sewage disposal works. B.E. & S. Dep. £2 2s.

GENERAL BUILDING WORK

(LONDON)

Cockfosters.—HOUSES.—Plans approved for 10 houses at Westpole-la.-ave. Architect, Harwood Nash, 14, Chase-side, N.14.

East Ham.—REBUILDING.—88-96, Elizabeth-st. and 60, Leytonstone-rd., E., for W.D.C. Architects, A. J. Shingler & Partners, 13, Wilson-st., E.C.2.

Hammersmith.—FLATS.—B.C. to erect 32 flats at Frithville-gdns.

Lower Regent-st.—OFFICES.—Plans by Wimperis, Simpson, Guthrie and Fyffe, 61, South Molton-st., W.1, for 9-storey block of offices, 5-11, Lower Regent-st., S.W.1.

Soho-sq.—OFFICES.—Proposed at 33-34, Soho-sq. and 15-16, Dean-st. Arch., L. C. Norton, 16, Clifford-st., W.1.

Wood Green.—FLATS.—Plans by G. C. Fox, 1, Blakesware-gdns., N.9, for 9 flats and 5 garages at 89, Trinity-rd.

(PROVINCIAL)

Bath.—Housing Cttee. contemplate rebuilding as flats the buildings at 28-32, The Paragon. Architects, Tew & Oliver, 7, Northumberland-bldgs.

Bedford.—B.C. to build 40 houses at Harrowden-rd.

Biddulph.—U.D.C. propose development of Braddocks Hey estate for 700 houses. W. J. Venables (L.), Dane House, West-rd., Congleton, Ches.

Blackburn.—Hindle, Son & Co., Ltd., Union Engineering Works, Witton, propose extensions.

Bolton.—T.C. propose:—Dining-room at county grammar sch.; adaptation of Woodside, Chorley New-rd., for residential sch.; sch. canteen at Back Dean Church-la. and Queen's-rd.

Bournemouth. — T.C. approved following plans:—14 flats and 12 houses at Castle-la., for War Memorial Homes Cttee. (John Burton, (F.), Town Hall); development of Queen's Park estate (architects, Reynolds, Tomlins & Baxter, Granville-chbrs.); block of 21 flats, Tuckton Bridge (Reynolds Tomlins & Baxter); old person's flats, Bear Cross (John Burton (F.)).

Bramhall.—Ches. C.C. propose adaptation of Highfield sch. as annexe to county primary sch.

Bromsgrove.—U.D.C. approved:—Additions to Bromsgrove garage, for Midland "Red" Omnibus Co., Ltd., Bearwood, Birmingham; S.D. houses, Uplands estate, for J. H. Harris, Ltd.; extensions to factory at Sugarbrook, for Bowes Bldg. Co.; houses at East-rd., Stoney-hill for F. Koss & E. W. Miles; bank premises at New-rd., Rubery, for Birmingham Municipal Bank; S.D. houses, Marlbrook-la., Marlbrook, J. and F. Harris.

Castle Bromwich.—Warwicks C.C. propose county sec. sch. C. H. Elkins (L.), C.A., Shirehall, Warwick.

Chester.—Rev. A. W. G. Duffield, vicar, and parochial council of St. John's mixed sch., Grosvenor-st., propose alterations to sch. bldgs.

Corby.—Northants C.C. propose adaptation of bldgs. for library.

Darlington.—Plans approved for 24 houses (48 flats) at Shakespeare-rd., for T.C. Boro' A. A. E. Tornbohm, Central-bldgs.

Darwen.—T.C. propose adaptation at Bullhill hospital for maternity home.

Durham.—C.C. recommended by north-western area education cttee. to complete Langley Park modern school at £27,000. C.A., G. R. Clayton, Court-la.

Gosport.—T.C. propose health centre at Bridgemary housing estate.

Hexham.—U.D.C. to erect 36 houses.—Council to spend £3,920 on roads and sewers for prefabricated housing at South-park.

Kenilworth.—U.D.C. received allocation of 55 houses by M.H.

Liverpool.—T.C. propose central swimming baths at Cornwallis-st.

Llanyehan. — Denbighshire C.C. propose conversion of Clwyd Hall into Nursery School.

Manchester.—T.C. approved:—Conversion of bldgs. into dance hall at Higher York-st., Chorlton-upon-Medlock, for J. S. Morley (J. Price Nunn & Partners (F.), 180, Oxford-rd., Chorlton-upon-Medlock); additions to works at rear of 13, Wilmslow-rd., Rusholme, for S. A. Barton (E. C. Costello, arch., 325, Langworthy-rd., Pendleton); houses at Lorna-gr., Northern Etchells, for Wm. Savage (H. Hankinson (L.), 3, The Downs, Altrincham); additions at rear of printing works, Allison-st., Cheetham, for Electric (Modern) Printing Co., Ltd. (Drury & Gomersall (L.), 7, Imperial-bldgs., Oxford-rd.); office and house at 133, Upper Conran-st., Harpurhey, for J. Lowe; additions to Wellington Mills, Pollard-st. East, Ancoats, for Bazley Bros., Ltd.; additions to garage and workshop at Cecil-st., Moss-side, for A. H. Barlow (Transport), Ltd. (F. Whiteley, arch., Bank-bldgs., Bank-st., Wilmslow, Ches.); additions to works at 117, Rusholme-rd., Chorlton-upon-Medlock, for Runbaken Electrical Products, Ltd.; 3 flats at 140, Bury Old-rd. Crumpsall, for Thorpe, Smith & Sunter (L/F.), 66, Deansgate; additions to works at Redbank and Adeline-st., Cheetham, for William E. Cary, Ltd.

Margate.—Plans approved for conversion into flats of Arcadian Hotel, Fort-rd. Architects, Kenneth Lindy, Joseph Hill & Partners, Baltic Exchange-chbrs., St. Mary Axe, E.C.3.

Meriden.—R.D.C. propose agricultural houses at Bickenhill.

Newcastle.—Vickers Armstrong, Ltd., Elswick, to build stores and metal recovery shop and fire station. Architects, R. T. James & Partners, St. Nicholas-bldgs.

Northampton.—H. Samuel, Ltd., Hunters-rd. works, Birmingham 19, propose shops and offices at Abington-st. (Sir John Brown, A. E. Henson & Partners (F. & A.), 30, Billing-rd.).

Northenden.—British Fondants, Ltd., Longley-la., propose garage for motor vehicles at rear of works in Longley-rd. (Major R. Bull, arch., 73, High-st., Cheadle, Cheshire).

Northumberland.—Alterations to Cramlington child welfare centre and dental clinic by C.C. Also canteen kitchen at Knaresdale C.E. sch. C.A., County Hall, Newcastle-on-Tyne.

Reading.—B.C. approved, in principle, 5-storey block of flats at Downshire-sq., for W. Album. Architect, H. E. Foreman, Newlyn, Orchard-ave., Windsor.

Reading.—Alterations to premises at Sackville-st., for Reading and District Co-operative Soc., Ltd., Cheapside. Architects, Sainsbury & Chamberlain, 14, Cross-st.

Salford.—T.C. propose central bus station on site with frontages to New Bailey-st., Worsley-st. and Quay-st.

Scarborough.—T.C. approved:—Alterations to 144, Victoria-rd., for Meadow Dairy Co., Ltd.; houses at Castlegate and Long Westgate (W. S. Gray, arch., 100, Filey-rd.); alterations to butchery at 207, Newborough, for J. H. Dewhurst, Ltd., Smithfield, E.C.1; alterations to bank premises at 4, Westborough, for National Provincial Bank, Ltd., Gracechurch-st., E.C.3; houses at Hoxton-rd. (Wilkinson & Smith (L.), Martin's Bank-chbrs., 96, Westborough).

Seaton Valley.—U.D.C. to erect 34 houses at Seghill. Plans prepared by S., Council Offices, Seaton Delaval, for roads and sewers for dwellings.

Shrewsbury.—Shrops. C.C. propose county primary sch. at Monkmoor camp.

Stafford.—Rev. W. A. Parker, rector, and parochial council of St. Matthew's propose alterations to church bldg. at £15,000.

Stockport.—T.C. received approval for day nursery at Welkin Mill.

Stockton-on-Tees.—Harker & Son, Danby-rd., Stockton, to erect engineering workshop and offices at Church-rd. Architect, F. W. Turnbull, White House, Carlton.

Stoke-on-Trent.—General Cttee. of Reginald Mitchell Spitfire Memorial Fund propose conversion of The White House, Broad-st., Hanley, into youth centre.

Sunderland.—Y.M.C.A. to carry out £20,000 modernisation scheme at Fawcett-st. Architects, S. W. Milburn & Partners, The Esplanade.

Swansea.—T.C. applying for loan sanction of £89,596 for new grammar sch.—T.C. to issue licences to private persons to build 20 houses.—T.C. to apply to Ministries for consent to use New-st. site for flats.—30 houses to be built at Penlan under apprentice training scheme.—T.C. to erect 62 dwellings at West Cross, subject to approval of Welsh Board of Health.

Wakefield.—E.C. approved Lupset primary infants' sch. No. 1 and Eastmoor primary infants' sch. Plans by E. H. Stazicker, A.M.I.C.E., Town Hall.

Warrington.—R.D.C. propose developing site at Lord-st., Croft, for houses.

West Bromwich.—Mitchell & Butlers, Ltd., Cape Hill Brewery, Birmingham, to build licensed premises at Holyhedge-rd.

West Bromwich.—6 shops and flats, garage, workshop and showrooms at Old Walsall-rd. Architect, E. B. Pierce, 167, Church-rd., Birmingham 26.

West Bromwich.—Handsworth Wood Estates, Ltd., 8, Waterloo-st., Birmingham 2, propose 20 houses at Appleton-ave. Plans by company's surveyor, A. E. Sorrell.

Worthing.—F. Sandell & Sons, builders, Amelia-rd., applied for licence for erection of 2 blocks of flats at Princess-ave.

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TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government departments.*

Albert Dock.—Extensions and alterations to nurses' home, for Albert Dock Hospital Committee. Architects, Collcutt & Hamp, 12b, Wigmore-st., W.1: *Arbro, Ltd., 53a, Malpas-rd., Stratford, E.14.

Andover.—Seven pairs of houses at three sites, for R.D.C. F. Henshaw (F.), Westminster Bank-chbrs., Andover. Chilbolton Site: ‡Birkett & Co., Ltd., Manor-rise, Anna Valley, Andover, £7,895; Grateley Site: ‡H. G. Piper, Ltd., 12, Marchant-rd., Andover, £3,091; Shipton Bellinger Site: ‡Sturgess Bros., Appleshaw, Andover, £8,233.

Bristol.—Proposed Novers-la. junior and infants' school, for E.C. Architect, J. Nelson Meredith (F.), Eagle House, Colston-av.: *John Knox (Bristol), Ltd., Coronation-rd., Bristol 5 (estimated cost, £98,000).

Chadwell Heath.—Rebuilding 20, 22 and 24, Gordon-rd., for W.D.C. Architects, W. Goodchild & Co., 85, South-st., Romford, Essex: *L. W. Tidder, Ltd., 63, Castellan-av., Gidea Park, Essex.

Darlington.—22 houses for workers of Paton,

Baldwin Ltd. Architects, Cackett, Burns Dick & McKellar, 21, Ellison-pl., Newcastle: *J. Laing & Co., Lingfield-la., Darlington.

Darlington.—Houses at Nickstream-la., for T.C. Plans by A. E. Tornbohm, Boro' A., Central-bldgs.: *Direct Labour. £13,675.

Darlington.—New junior mixed department at Alderman Leach school, for C.B. Boro' A., Central-bldgs.: *Edgar Lawson, Ltd., 10, Woodland-rd., Darlington, £47,634.

Deal.—50 houses at Orchard-av. estate, for T.C. J. L. Sharratt, B.E., Municipal Offices, Queen-st.: *Geo. Parker & Sons, Ltd., Sumner-rd., Peckham, S.E.15, £66,593.

East Ham.—Rebuilding 45-47, Skeffington-rd. Architects, A. J. Shingler & Partners, 13, Wilson-Wilson-st., E.C.2: *Paris, Smith Bros., 90-92, George-la., E.18.

East Ham.—Rebuilding 20-22, Barkhurst-rd. Architects, A. J. Shingler & Partners, 13, Wilson-st., E.C.2: *Woodward & Co. (Finsbury), Ltd., 12, Wilson-st., E.C.2.

East Lothian.—Dunbar, New Primary School, for C.C. Duncan Livingstone, A.R.I.B.A., A.M.T.P.I., County A., Haddington. Mason and brickwork: *G. & J. Allan, 16, East Loan, Prestonpans. Pre-cast concrete hollow slab floor work: *Concrete, Ltd., Etna-rd., Falkirk. Structural steel work: *Redpath, Brown & Co., Ltd., St. Andrew Steel Works, Edinburgh. Electrical work: *Jas. Plucknett, Ltd., 132, George-st., Edinburgh 2. Glazier work: *Jas. Thow, Ltd., 33, George-st., Ayr. Composition flooring work: *The Builders' Supply Co., Ltd., Gorgie Station, Edinburgh 1. Plaster and cement work: *R. Baillie & Sons, Ltd., 55, Market-st., Haddington. Roughcast work: *R. Baillie & Sons, Ltd., 55, Market-st., Haddington. Steel windows: *Metal Casements, Ltd., Tantarra-st., Walsall. Plumber work: *Anderson & Cuthbert, 114, High-st., Dunbar. Carpenter and joiner: *Wm. Brown, Main-st., Ormiston. Painter: *C. & A. Gray, 14, West Port, Dunbar. Roof asphalt: *D. Anderson & Son, Ltd., Queen Elizabeth-av., Hillington, Glasgow, S.W.2. Heating installation: *The Brightside Foundry & Engineering Co., Ltd., 29, Frederick-st., Edinburgh.

Finsbury.—Conversion of 11 houses into 30 flats at Myddelton-sq., for New River Co., Ltd., 30, Myddelton-sq., E.C.1: *Henry Kent (Builders), Ltd., 51, Beacon-rd., Hither Green, S.E.13.

Goole.—(a) 30 houses and 12 flats at Moorfields site, including painting; (b) electrical work at same site, for B.C. D. C. Kean, M.I.Mun.E., A.R.I.C.S., B.E. & S.: (a) *Bainbridge (Builders), Ltd., Doncaster £41,510; (b) *The Don Electrical Co., Rotherham (Electrical), £1,227.

Gosforth (Northumberland).—Completion of contract for 10 houses at Grange-la. estate, for U.D.C.: *F. Brown & Son, Elmfield-rd., Gosforth.

Gosport.—50 houses at Bridgemary, for T.C.: *C. M. Dash & Son, £63,004.

Hackney.—36 flats (third section), Forest-rd. scheme, for B.C.: *Direct Labour, £52,670 (subject to L.C.C. & M.H. approval).

Herefordshire.—Additions and alterations to existing buildings at Weobley School, for E.C. W. Usher (A), County A. Quantities by Vale & Kingsford: *Hiles & Son, Ltd., Holme Lacy-rd., Hereford (approx. cost £3,000).

Herefordshire.—Primary schools at Hunderton, for C.C. W. Usher (A.), County A., County Offices, Hereford. Quantities by Vale & Kingsford: *Wm. Bowers & Co., Ltd., Bath-st., Hereford (approx. cost £60,000).

Ilford.—Rebuilding Nos. 134-136, Clayhall-av., for W.D.C. Architect, B. R. Bostock, 48, High-st., E.C.1: *Thurlow & Ellis, Ltd., Clayhall-av., Ilford, Essex.

Islington.—Eight bed-sitting-room flats for aged persons at College Cross site, for B.C.:—

Ferris Bros., W.3	£18,719
McLaughlin & Harvey, Ltd., N.5 ...	15,590
Dove Bros., Ltd., N.1	14,985
Sprosson & Babb, Ltd., N.19	14,763
E. H. Burgess, Ltd., S.W.1	14,704
C. & F. Bryen, Ltd., N.6	14,077
*Patman & Fotheringham, Ltd., 15, Islington Park-st., N.1	13,721

Kingsbridge.—Four pair blocks of houses at West Alvington, for R.D.C. H. Parsons, architect, Council Offices, Manor House, Kingsbridge: *J. W. C. Scoble & Son, Ltd., Wallingford-rd., Kingsbridge, £12,511 (subject to M.H. approval).

Knaresborough.—22 houses at Meadowside estate, for U.D.C. G. H. Davis, E. & S.: *Calverley Construction Co., Calverley, nr. Leeds, £27,581.

Leatherhead.—Air Ministry rehabilitation centre at Headley Court, for M.O.W.: *James Longley & Co., Ltd., Crawley, Sussex.

Lewisham.—Rebuilding Nos. 28-44, Kilgour-rd., for W.D.C. Architects, L. E. Tompkins & Co., 1, Stondon Park, Forest Hill, S.E.23: *Turner & Trent, Ltd., 89, High-st., Welling, Kent.

Lewisham.—Rebuilding Nos. 29-45, Kilgour-rd., for W.D.C. Architects, L. E. Tompkins & Co., 1, Stondon Park, Forest Hill, S.E.23: *Pinsent Bros., 13, Ronelean-rd., Tolworth, Surrey.

Lindsey.—Canteen and dining-room for Louth Grammar Schools at Westgate House-garden, for E.C. A. Ronald Clark (A.), A.M.T.P.I., County A.: *H. Dougill, Mablethorpe, £4,752.

London.—Reinstatement of office building, 27-28, Pall Mall, S.W.1. Architects, T., P. H. & E. Braddock, (F/A), 15, Great Smith-st., S.W.1: *Token Construction Co., Ltd., 22, Park-st., W.1.

London.—War damage repairs and conversion into flats to 56-58, Green-st., W.1. Architect, W. R. Kockmann, M.Inst.R.A., Lincoln House, Basil-st., Knightsbridge, S.W.1: *Fortis Erectors, Ltd., 62, West Drayton-rd., Hillingdon, Middx.

L.C.C.—Contracts exceeding £2,500 in value placed by L.C.C. during period ended September 16:—For construction of six blocks of dwellings and 12 perambulator sheds at Avebury Estate, Bethnal Green, Allen Fairhead & Sons, Ltd., Enfield.

¶London (Admiralty).—*Portsmouth*, H.M. Dockyard: Insulation of store and engineering shop, Warings (Contractors), Ltd., London-rd., Hilsea, Portsmouth. *Rosyth* Dockyard, Superstructure for building, Sir Wm. Arrol & Co., Ltd., Bridgeton, Glasgow, S.E.

¶London (M.O.W.).—Contracts placed by M.O.W. during week ending September 11:—M.O.W. during week ended Stptember 11:—Regent's Park, Canteen, Holloway Bros., Bridge Wharf, 157, Millbank, S.W.1; H.M.S.O. Garage, Pocock-st., Southwark, Marston shedding, etc., J. Garrett & Son, Ltd., Cathles-rd., S.W.12; Somerset House, W.C.2, Painting and cleaning, C. & T. Painters, Ltd., Mordaunt-rd., N.W.10; New Government Offices, Whitehall, Construction of foundations, Gilbert Ash, Ltd., 2, Stanhope-gate, W.1; Government Buildings, Bromyard-av., Acton, Occupational services, Walker Symondson, Ltd., Braintree-rd., Ruislip, Middx. *Ches*: Ministry of Health Hospital, Clatterbridge, Adaptations, T. Warrington & Sons, Station-rd., Ellesmere Port. *Glam*: No. 1 Canteen, T.O.B., Cardiff, Extensions, W. E. Chivers & Sons, Ltd., Devizes. *Gloucs*: Butts Cross, Lower Soudley, Gloucester, Telephone repeater station, E. I. Imm & Co., 41, High-st., Lydney, Glos; Babdown Polish Hostel, nr. Tetbury, Glos, Alterations and decorations, Holborow & Sons, Ltd., Tetbury, Glos. *Hampshire*: Portsdown Mod. Sec. School, Cosham, Portsmouth, School kitchen and dining-room, John Hunt, Ltd., South Wharf, Cleveland, Gosport, Hants. *Lanarkshire*: Elmwood R.C. School, Bothwell, Dining-room and scullery, Cowiesons, Ltd., 3, Charles-st., St. Rollox, Glasgow. *Lancs*: Employment Exchange, Manchester, Completion of superstructure, P. Harmer, Ltd., Park-st., Swinton; Woodland Industrial Hostel, Chorley, Internal cleaning and decorations, Wilfred Coop, Ltd., 94, Whitegate-dr., Blackpool; Horrocks-av., Garston, Liverpool, Hutted accommodation, dining-room and kitchen, Norwest Construction Co., Ltd., Ruthven-rd., Liverpool; St. Winifred R.C. School, Bootle, Hutted accommodation, Worthingtons' (Contractors), Ltd., Shaw-st., Liverpool 6; Dingle Dale Sec. School, Liverpool, Hutted accommodation, John Lucas & Sons (Bldrs.), Ltd., Eccleston-st., Prescot; Sen. Mixed County School, Stockton Heath, Hutted accommodation, Mearsley & Gee, Ltd., Heath-rd., Sawmills, Ashton-in-Makerfield; Wilbraham-rd. Prim. School, Fallowfield, Manchester, School kitchen, F. J. Gibson (Bldrs.), Ltd., 38a, Manchester-rd., Wilmslow, Cheshire. *Leics*: Infants' School, Evington Valley-rd., Leicester, School kitchen and dining-room, Bowles & Son, 8, Gladstone-st., Leicester; Infants' School, Wyvern-av., Leicester, School kitchen and dining-room, Bowles & Son, 8, Gladstone-st., Leicester. *Monmouthshire*: Rhiw-Syr-Dafyod School, Dafedale, Temp. school buildings, T. Dickinson, Railway-bldgs., Tredegar; Hereford-rd. School, Abergavenny, Temp. school bldgs., Foster & Hill, Hatherleigh Lodge Works, Brecon-rd., Abergavenny.

Northumberland: Western School, Wallsend, Classrooms, Thos. Armstrong, Ltd., Robson-st., Shields-rd., Newcastle-on-Tyne. *Notts*: Pierrepoint Rosehill Sec. School, Garden-rd., Nottingham, Kitchen and dining-room, R. Hustwayte, 37, Haydon-rd., Sherwood, Nottingham. *Oxfordshire*: Chalgrove Airfield, Adaptations to form A.E.C. hostel, G. L. Walker (Oxford), Ltd., 18, Pembroke-st., St. Aldates, Oxford; Grimsby Sen. County School, Banbury, School kitchen, dining-room and scullery, Hinkins & Frewin, Ltd., 2, West Bar, Banbury. *Shropshire*: County Sec. Mod. School, Station-rd., Much Wenlock, Dining-room and kitchen, John McLean (Bldrs.), Ltd., Coven, nr. Wolverhampton. *Suffolk*: Sutton Walks, nr. Woodbridge, No. 2 Type houses, Wm. C. Reade, 70, High-st., Aldeburgh. *Sussex*: Mount Pleasant Coun. School, Hastings, Kitchen and dining-room, A. E. Goodsell & Son, 25, Lennox-st., Hastings. *Warwickshire*: Brooklands Hostel, Coventry, Internal painting, J. Daniels, 7, Russell-st., Coventry. *Worcs*: E.V.W. Camp, M/Ag. & Fisheries, Hampton Lovett, Alterations and adaptations, Kent & Sussex (Contractors), Ltd., 270, Corporation-st., Birmingham. *Yorks*: Queen-st., Hull, Temp. workshop and garage, Quibell & Sons, Beverley-rd., Doncaster.

¶London (War Dept.).—Works contracts placed by War Dept. for week ended September 11:—

Leics: Hutting work, A. H. Taylor (Nottingham), Ltd., Nottingham. *Lancs*: Miscellaneous work, R. S. Ainscough, Ltd., Oldham; Miscellaneous work, Sutch & Miller Hughes (inc. J. Webster Bros.), Wavertree, Liverpool 15. *Salop*: Hutting work, M. A. Boswell (Contractors), Ltd., Wolverhampton. *Kent*: Roadwork, W. & J. Glossop, Ltd., London, W.6. *Berks*: Renewal of stanchion bases, J. Chuter (Farnborough), Ltd., Farnborough, Hants. *Surrey*: Miscellaneous work, J. W. Jones (Weybridge), Ltd., Weybridge.

Luton.—Block of 11 shops with maisonettes above at Leagrave estate, for T.C. F. Oliver, A.M.I.C.E., architect, Town Hall: *C. G. Claydon, 712, Hitchin-rd., Luton. £45,177.

Maida Vale.—Rebuilding 32, Maida-vale, 12-14, Chandos-rd., and 2, Mowbray-dr. R. Seifert (F.), 28, Great Ormond-st., W.C.1: *Stovells, Winnington-rd., N.W.3.

Manchester.—Reinstatement of buildings at 177, Stretford-rd., Hulme, for Burgon's Investments, Ltd., Akers-pl., Akers-st., Chorlton-upon-Medlock: *Smith & Allcock, Ltd., 471, Chester-rd., Old Trafford, Manchester 16.

Manchester.—Office and timber store to works, City-rd. and Medlock-st., Hulme, for Morgan-Wallwork, Ltd. T. W. Sutcliffe (A.), 178, Oxford-rd., Chorlton-upon-Medlock: *G. & W. Smith (Builders), Ltd., Hyde-gr., Plymouth-gr., Chorlton-upon-Medlock, Manchester 13.

Manchester.—Shop, showroom and offices at 6-10, Oldham-st., for Barnett-Hutton, Ltd. B. Waterhouse (F.), 134, Deansgate: *Lycett & Platt, Ltd., 161, Plymouth-gr., Chorlton-upon-Medlock, Manchester 13.

Mere and Tisbury.—Two houses at East Knoyle, for R.D.C.: *J. C. Hallett, East Knoyle, £3,120.

Milford Haven.—Block of three shops and two flats at junction of Pill-la. and Pill-rd., for U.D.C. A. Moody, B.Sc., A.M.Inst.C.E., M.I.Mun.E., E. & S.: †Hadsphaltic Construction Co., Ltd., Pembroke Dock, £7,800. Subject to M.H. approval.

Mitford and Launditch.—Three pairs of Airey houses with drainage, sewage disposal works and water supply services, for R.D.C. Harold Marsh (L.), Market-pl., East Dereham: *J. H. Blyth & Sons, Foulsham, Norfolk, £9,455.

Morecambe and Heysham.—16 houses at Trumacar-la. site, for T.C. B.S.: *Heysham Building Co., Ltd., 8, Norton-pl., Morecambe and Heysham, £22,003.

Newburn.—Gear works factory for G. Angus & Co., Ltd. Architects, S. Milburn & Partners, The Esplanade, Sunderland: *G. Henderson, Boldon-la., East Boldon, Durham.

Newcastle-on-Tyne.—14 houses in flats at

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Overfield-rd., Carfield-rd., and Shrigley-gdns. Architect, M. A. Mackenzie, 1, Eldon-sq.: *J. H. Fisher & Co., Kenton-la., Newcastle-on-Tyne.

Newcastle-on-Tyne.—Three houses at Leyburn-dr. Architects: Marshall & Tweedy, Grainger House, Blackett-st., Newcastle: *A. Potts, Newcastle-on-Tyne.

North Riding.—Erection of ablution on blocks at Throxenby Hall Children's Home, for C.C. County A., J. Catchpole (A.), County Hall, Northallerton: *A. W. Sinclair & Sons, Ltd., Commercial-st., Scarborough.

North Westmorland.—Houses for R.D.C. 23 at Shap: *Buckle & Thompson, £30,464; five at Kirkby Stephen: *W. E. Sayer, £6,792.

Penryn.—Four houses at Bissom, for T.C. K. R. Blackmore, M.I.Mun.E., M.R.S.I., B.E. & S., Municipal Offices, Broad-st.: *Strongman (1945), Ltd., Falmouth-rd., Penryn, £6,450.

Pontefract.—Eight houses at Chequerfield estate, for T.C.: *Direct Labour, £10,168 (subject to M.H. approval).

St. Albans.—Houses for City Council. 52 at Beaumont estate: *T. & B. (St. Albans), Ltd., £75,556; four at Gorch-cl.: *A. E. Simms, Ltd., £4,896; four at Francis-av.: *J. W. Stephenson, £4,986.

Salisbury.—40 houses at Bemerton, for City Council: *Gorham (Contractors), Ltd., £50,576 (negotiated price subject to M.H. approval).

Sedgley.—Six houses at Gibbon-hill, for U.D.C. W. M. Jones, S.: *Tomlinson Bros., Waverley, High Park-cres., Sedgley.

Shoreditch.—Wash-house extension at Haggerston Public Baths, for B.C.: *J. Bee (Builders), Ltd., Carpenters-rd., Stratford, E., £7,313 (in lieu of tender previously accepted).

Somerset.—Bournville Junior School, Weston-super-Mare, for C.C. R. O. Harris (F.), County A., Park-st., Taunton:—

Kirk & Kirk, Ltd., Putney, S.W.15	£64,646
C. Bryant & Son, Ltd., Birmingham	58,184
Wilkins & Coventry, Ltd., Bristol 1	57,988
W. Burston & Son, Clevedon	57,565
Dudley Coles, Hartley, Plymouth	57,558
C. A. Hayes & Sons, Ltd., Bristol 8	57,474
Grainger Smith & Co., Ltd., Weston-super-Mare	56,180
J. Moore & Co., Ltd., Weston-super-Mare	55,395
W. J. Pople & Sons, Ltd., Burnham	55,175
J. Dyer & Son, Weston-super-Mare	54,985
Staverton Builders, Ltd., Totnes	54,480
W. J. Channing & Sons, Ltd., Burnham	53,871
James Moseley, Weston-super-Mare	52,645
*S. W. Foster, Ltd., Radstock	51,500

S. Kensington.—Reconstruction as flats of five-storey block at Cromwell-rd., for London Investment and Mortgage Co., Ltd., 39, Moorgate-st., E.C.2. Plans by Surveyor's Dept.: *G. E. Wallis & Sons, Ltd., 231, Strand, W.C.2.

South Kesteven.—Houses at three sites, for R.D.C.: *C. L. Palmer, Peterborough.

South Shields.—Canteen at Tyne Dock, for Wright's Biscuit Co. Architects, S. W. Milburn & Partners, The Esplanade, Sunderland: *D. & J. Ranken, Ltd., Sunderland.

Stafford.—26 houses at Rising Brook estate, for T.C. T. H. Higrony, B.S. Quantities by Townsland & Renandon, Stoke-on-Trent: *Lewis & Watters, Leamington Spa, Warwickshire (subject to M.H. approval).

Stretford.—External painting of 331 houses on estates at Moss-rd. and Gorse Park, for T.C. A. H. Perry, A.M.Inst.C.E., B.E.: *H. Schofield, 51, Hyde-gr., Plymouth-gr., Chorlton-upon-Medlock, Manchester 16, £1,500 (172); *C. W. Powell, 30, Derbyshire-la., Stretford, £794 (92); *Aster Decorating Co., Ltd., 102, Yarburgh-st., Moss Side, Manchester 16, £646 (67).

Swansea.—50 houses at Penlan estate, for B.C.: *Direct Labour, £70,007.

Swansea.—Rebuilding Albion-chbrs., Cambrian-pl., for James Pridmore. Architects, H. A. Ellis & Son, Swansea: *E. Turner & Sons, Ltd., Swansea.

Wallasey.—Six houses at P.6 site, for T.C. R. F. B. Grundy, B.Sc., A.M.Inst.C.E., B.E.: *William Thornton & Sons, Ltd., 36, Wellington-st., Lark Hill, Liverpool 8.

York.—164 houses and 20 Duplex flats at Ashham-la., for City Council: *F. Bilton, Ltd., £207,425.

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